PRE-ANNOUNCEMENT INFORMATION AVAILABILITY:

THE EFFECT OF MEDIA COVERAGE ON INVESTORS' RESPONSES TO

EARNINGS-RELATED INFORMATION

A Dissertation

by

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ABSTRACT

This dissertation consists of two essays on the effect of the media coverage on investors' responses to earnings-related information. In the first essay, *"The Effect of Media Coverage on Earnings Expectations"*, I examine whether media coverage has a direct effect on the information content of earnings and an indirect effect through changes in analyst forecast activity. Using a broad range of news events prior to earnings announcements, I find that pre-announcement media coverage improves analysts' anticipation of future earnings and stimulates their forecasting activity prior to earnings announcements. Moreover, after controlling for analyst forecast activity, I find that media coverage helps investors anticipate earnings information and preempts new information in earnings announcements. The path analysis and cross-sectional analysis further suggest that increased analyst forecast activities serve as a mechanism through which pre-announcement media coverage preempts the information content of earnings announcements. Overall, my findings highlight the important role of the media as an information intermediary in increasing the flow of financial information to capital markets prior to earnings announcements.

In the second essay, *"The Role of the Media in the Pricing of Industry-wide Earnings Information"*, I examine whether and how media coverage affects investors' responses to industry-wide earnings information. While prior research on the role of media as an information intermediary focuses on the price discovery of financial information at the *firm-level*, I address the question of whether media coverage

facilitates intra-industry information transfers and improves investors' timely responses to earning-related information at the *industry-level*. By analyzing a broad range of business news coverage during a fiscal year, I find that media coverage mitigates the delayed pricing of industry-wide earnings information. Cross-sectional analyses suggest the effect is concentrated either where industry-level news coverage is higher or intra-industry information transfer is easier. Additionally, industry-level news coverage increases stock price synchronicity, consistent with my argument that media coverage increases the amount of industry-wide information in prices. Overall, my findings highlight the important role that media coverage plays as an information intermediary at the industry-level: it efficiently extracts and disseminates common industry news and acts as a conduit for intra-industry information transfers.

DEDICATION

To my husband, Liu, and our kids, Robert and Lucas, for their endless love, encouragement, and prayers.

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1. INTRODUCTION

This dissertation consists of two essays on the effect of the media coverage on the flow of firm-specific and industry-wide financial information to capital markets before earnings announcements. The overall purpose of this dissertation is to investigate whether media coverage affects the pricing of earnings-related information at both the firm and industry levels.

In the first essay, *"The Effect of Media Coverage on Earnings Expectations"*, I examine whether media coverage has a direct effect on the information content of earnings and an indirect effect through changes in analyst forecast activity. Using a broad range of news events prior to earnings announcements, I find that pre-announcement media coverage improves analysts' anticipation of future earnings and stimulates their forecasting activity prior to earnings announcements. Moreover, after controlling for analyst forecast activity, I find that media coverage helps investors anticipate earnings information and preempts new information in earnings announcements. The path analysis and cross-sectional analysis further suggest that increased analyst forecast activities serve as a mechanism through which pre-announcement media coverage preempts the information content of earnings announcements. Overall, my findings highlight the important role of the media as an information intermediary in increasing the flow of financial information to capital markets prior to earnings announcements.

In the second essay, *"The Role of the Media in the Pricing of Industry-wide*

Earnings Information", I examine whether and how media coverage affects investors' responses to industry-wide earnings information. While prior research on the role of media as an information intermediary focuses on the price discovery of financial information at the *firm-level*, I address the question of whether media coverage facilitates intra-industry information transfers and improves investors' timely responses to earning-related information at the *industry-level*. By analyzing a broad range of business news coverage during a fiscal year, I find that media coverage mitigates the delayed pricing of industry-wide earnings information. Cross-sectional analyses suggest the effect is concentrated either where industry-level news coverage is higher or intra-industry information transfer is easier. Additionally, industry-level news coverage increases stock price synchronicity, consistent with my argument that media coverage increases the amount of industry-wide information in prices. Overall, my findings highlight the important role that media coverage plays as an information intermediary at the industry-level: it efficiently extracts and disseminates common industry news and acts as a conduit for intra-industry information transfers.

The remainder of the paper is organized as follows. Section 2 discusses the first essay. Section 3 discusses the second essay. Section 4 provides conclusions.

2. THE EFFECT OF MEDIA COVERAGE ON EARNINGS EXPECTATIONS

2.1. Introduction to Section 2

Price discovery involves gradual information diffusion and the formation of investors' earnings expectations (Lee 2001; Hong and Stein 1999). The stock market anticipates much of the information associated with earnings news prior to the actual earnings announcement (Ball and Brown 1968). The media regularly collects and disseminates firm-specific news, continually providing market participants with information. By making business news more available, pre-announcement media coverage lowers market participants' information acquisition costs (i.e., time and effort), hence increasing the amount of information they can assimilate prior to earnings announcements. This study investigates whether media coverage affects the pre-announcement information asymmetry between managers and capital market participants and the incremental information content of earnings announcements. Specifically, I examine whether media coverage over a long pre-disclosure window improves financial analysts' and investors' ability to anticipate and understand earnings information.[1]

Extant studies on the role of media in the context of earnings focus on the dissemination of particular disclosures (e.g., management guidance and earnings

[1] Another stream of literature on the role of media in capital markets focuses on social media such as Twitter and Facebook (Blankespoor et al. 2014; Lee et al. 2015; Bartov et al. 2018). This study focuses on the traditional and professional business press because it covers a broader range of economic events and is less likely to disseminate misleading and speculative information as compared to those social media platforms. This paper uses the terms media and business press interchangeably.

announcements) and find that media coverage improves the price discovery of the disclosed earnings information. (e.g., Twedt 2016; Guest 2017; Blankespoor et al. 2018). An unanswered question is whether media coverage affects market participants' earnings expectations and influences price discovery prior to public disclosures. I fill this gap in the literature by examining the effect media coverage over a long pre-disclosure window on the incremental information content of earnings announcements.[2] I argue that an additional important role of the media is to develop and publicize information that reduces the information gap between managers and investors prior to firm disclosures. Media coverage extends beyond broadcasting the firm's announcements, and includes increasing the amount of information assimilated into prices and decreasing the amount of news left for managers to disclose. Specifically, I predict that pre-disclosure media coverage improves market participants' anticipation of earnings news and reduces the amount of new information at the earnings announcement. This prediction is consistent with prior research, which shows that the better investors anticipate earnings news, the smaller the surprise in earnings announcements (e.g., Atiase 1985; El-Gazzar 1998; Beaver et al. 2018).

The extent to which media coverage in a long pre-announcement window influences the pricing of earnings information, a priori, is unclear. First, while media coverage of an event stimulates trading activity in a short horizon, it does not necessarily

[2] For example, earnings response coefficient type of tests examines price changes in response to one unit of unexpected earnings in disclosures (e.g. Twedt 2016; Guest 2017). I do not estimate the price sensitivity to a given amount of news in firm disclosures, instead, I am interested in understanding the effect of media coverage on the amount of incremental new information disclosed in earnings announcements.

improve price efficiency by moving stock prices to their fundamental value in the long term. For example, short-horizon traders may focus excessively on short-term or sensational information while ignoring information about fundamentals.[3] Second, alternative information sources such as social media, webcasts, and firm disclosures also convey information to market participants, so the long-term efficacy of traditional media in the context of earnings might be limited. Furthermore, prior research has mainly focused on the dissemination role of media coverage, however, the speed of information distribution during the non-announcing period should not affect the magnitude of the incremental information arrival at earnings announcement.

This study investigates both the direct and indirect effects of pre-announcement media coverage on investors' responses, with indirect effect arising through analyst forecast activity. First, I examine the effect of pre-announcement media coverage on analyst forecasting behavior. Financial analysts obtain information from various sources such as earnings announcements, broker-hosted investor conferences, and private communication with management (Zhang 2008; Green et al. 2014; Brown et al. 2015). The media potentially helps analysts better anticipate information in upcoming earnings announcements by broadening their information access and lowering information acquisition costs. Therefore, as media coverage increases, analysts would increase the

[3] News is short-term in nature. Fenton (2009) describes the contemporary work ethic of media industry as "speed it up and spread it thin." News reports change stock prices and increase trading volume within days, minutes, or even seconds after their releases, most likely because of trading by retail investors (von Beschwitz et al. 2013; Rogers et al. 2016; Peress 2014). In a theory paper, Froot et al. (1992) show that short horizon traders may acquire information unrelated to true asset values, making the market less efficient. Hence, media coverage may not necessarily improve the price discovery of earnings information.

frequency and accuracy of their earnings forecasts, thus obtaining less new information from the earnings announcements. On the other hand, media coverage may not improve analysts' understanding of earnings-related information because analysts are sophisticated information users and financial experts who are likely to rely primarily on their own research.

Using business press coverage of a broad range of news events from the RavenPack Dow Jones database from 2000 to 2016, I find that pre-announcement media coverage is positively associated with analysts' forecast accuracy relative to time-series forecasts. Moreover, pre-announcement media coverage is positively associated with forecast frequency prior to earnings announcements and negatively associated with analyst responsiveness to earning announcements. Collectively, these results suggest that analysts benefit from the widely accessible information provided by the pre-announcement media coverage and produce more valuable earnings forecasts; thus, they also obtain less incremental information when the earnings are released.

Next, I investigate the relationship between media coverage preceding earnings announcements and investors' responses to earnings announcements. Earnings summarize a firm's economic performance over a fiscal period and significantly explain firm value (Easton and Harris 1991). The media often screens and collects a wide range of news events (e.g., earnings guidance, product releases, and labor issues), and broadly distributes them to the markets throughout the year, consequently decreasing the pre-disclosure information asymmetry between managers and investors. This aids investors in forming earnings expectations and reduces the incremental information (i.e., surprise)

provided by earnings announcements. To measure the information content of earnings announcement, I construct a revaluation index using the relative price movement in the announcement versus the non-announcement periods. After controlling for an extensive set of controls that account for differences in firm characteristics, I find that media coverage during the pre-announcement period is negatively associated with the revaluation index. This suggests that pre-disclosure media coverage helps investors anticipate earnings information and preempts the information content in earnings announcements. This finding is robust to including analyst forecast frequency and analyst responsiveness, and to the inclusion of firm fixed effects.

Finally, I examine whether analyst forecast activity serves as a mechanism through which pre-announcement media coverage preempts the information content of earnings announcements. Analysts' forecasts of earnings often serve as a proxy for market expectations of earnings (Givoly 1985; Brown et al. 1987). If analyst forecast activity helps investors to anticipate earnings, then I expect pre-announcement media coverage to have an indirect effect on investors' responses to earnings announcements through increased analyst forecast activity. Using a path analysis design, I find evidence that pre-announcement media coverage has both direct and indirect effects on the incremental information content of earnings announcements, with the indirect effect arising through changes in analyst forecast frequency prior to earnings announcements. To corroborate this finding, I further conduct cross-sectional analyses based on situations in which the effect of media coverage is likely to vary with analyst forecasts. I find that the negative association between pre-announcement media coverage and the

price revaluation around earnings announcement is stronger when analyst forecasts are more frequent or when there is a larger number of analysts covering the firm.

Given that press coverage is not random, I conduct a number of tests to address endogeneity concerns and examine the robustness of my primary results. First, I employ firm-fixed effects to control for time-invariant factors that could drive both media coverage and market participants' reactions, and find my results hold consistent. This mitigates the concern about spurious correlation due to unobservable firm characteristics. Second, I use an instrumental variable (IV) approach, using the lagged media coverage as an instrument. A firm's prior year media coverage is likely to be associated with current year media coverage, but it is unlikely to directly affect investors' and analysts' reactions to a given firm's earnings announcements due to its lagged nature. The results from the IV approach support my main findings. Third, I show that my full sample results are robust to using a matched sample based on industry, year, size, and firm disclosures. Fourth, I perform within-sample analysis on a group of firms experiencing significant changes in media coverage over years, and show consistent results. Lastly, I repeat my analyses using a small subsample where there are no SEC 8-K filings or management guidance issuance. I find consistent evidence that pre-announcement media coverage is positively associated with analysts' and investors' anticipation of, and timely response to, earnings-related information.

In additional analyses, I seek to identify the types of news events that help investors and analysts form their earnings expectations. Investors could arguably use news stories on underlying economic activities such as product releases and labor

conditions to improve their earnings expectations. However, given investors' information-processing constraints, it is possible that investors only pay attention to news emphasizing earnings numbers. I find that both the earnings-related and non-earnings-related media coverage help investors anticipate earnings news and preempt the information content in earnings announcements. Interestingly, while news stories that are not directly related to earnings numbers are positively and significantly associated with analysts' forecast accuracy, news stories emphasizing earnings numbers are not significantly associated with analysts' forecast accuracy. These results suggest that analysts and investors gain different information from media coverage when forming their earnings expectations.

This study contributes to the literature on the role of the media as an information intermediary in the capital market. The media plays an essential role in shaping a firm's information environment, but the few extant accounting studies on the media examine how media coverage increases return responses to specific announcements (e.g., Bushee et al. 2010; Drake et al. 2014; Twedt 2016; Ahn et al. 2019). Media coverage in short windows around one corporate event does not reflect the full extent of the media's role in shaping a firm's information environment. This study shows that long-window pre-announcement media coverage has both a direct effect on the information content of earnings and an indirect effect through changes in analyst forecast activity. Furthermore, empirical evidence of interactions between the media and other financial intermediaries is still relatively undeveloped (Miller and Skinner 2015). I provide evidence of the interaction between two important financial intermediaries — the business press and

financial analysts. Lastly, Recent reductions in analyst headcount and research budgets arising from changes in technology and regulation at major investment banks.[4] These changes in the sell-side analyst industry raise the question of where investors get information to form their earnings expectations. My study provides evidence that the business press, as an information intermediary, plays an important role in facilitating information diffusion and forming investors' earnings expectations.

2.2. Literature Review, Motivation and Hypothesis Development

2.2.1. The Business Press as an Information Intermediary

It is well-documented that information intermediaries such as financial analysts and credit rating agencies, provide important information regarding firms' future prospects to capital markets (e.g., Lys and Sohn 1990; Jorion et al. 2005). Recently, an emerging stream of research recognizes the crucial intermediary role that the business press plays in capital markets. The business press provides information to capital market participants through information creation and dissemination roles (Bushee et al. 2010). To investigate the media's information creation role, Bushman et al. (2017) examine private lending syndicates and find the media provides new information to less-informed lenders via media sentiment (i.e., the tone of the news). Peress (2008) focuses on the information dissemination role by using media coverage as a proxy for investor attention. He finds that earnings announcements covered by the media generate stronger

[4] An example of related media report is "Final call for the research analyst?" in the *Financial Times* (https://www.ft.com/content/85ee225a-ec4e-11e6-930f-061b01e23655).

price and trading volume reactions at the announcements. Moreover, Li et al. (2011) show that newswire services screen for key information disclosed in SEC filings, identify value-relevant information buried in such filings, and offer market-moving news alerts. While the SEC filings are publicly available, these news alerts trigger significant market reactions.

Extant studies examining the influence of the media in price formation of financial information focus on the news coverage of particular disclosures. For example, Twedt (2016) finds that news dissemination, measured by news articles written about the guidance on its announcement day, is positively associated with initial price reaction to the guidance and the speed with which guidance information is incorporated into price. Blankespoor et al. (2018) study the effects of media synthesis and dissemination. They find that automated news articles generated within three days of each earnings announcement increase both trading volume and liquidity. In a related study, Rogers et al. (2016) examine the market effects of media coverage of insider trading filings with the SEC. They find a substantial increase in trading volume within the two-minute window following media coverage of insider trading filings with the SEC on the Dow Jones Newswires.

Generally, prior literature examining the market response to the disclosed financial information concludes that the dissemination of firm-initiated disclosure by the business press helps price discovery. My study adds to this line of literature by examining a different perspective of media coverage and investigates a different stage of price discovery of earnings information — earnings expectation formation. Specifically,

this study examines whether pre-announcement media coverage improves capital market participants' earnings expectations, and consequently reduces the amount of news contained in the earnings announcement.

2.2.2. Analysts' Responses

As relatively sophisticated users of financial information, sell-side analysts gather and evaluate various sources of information and then publish their expectations of the firm's future performance. Kross et al. (1990) provide some early evidence that analysts' information advantage is positively associated with firm coverage in *The Wall Street Journal Index*, using 279 firms from 1973 to 1981. They argue that the amount of public information available increases analyst forecast performance. Recently, Bradshaw et al. (2017) investigate whether sell-side analysts use information from firm-specific print news coverage. They find that the quantity of news coverage of a firm is positively associated with subsequent recommendation revisions, and that the usefulness of media coverage is driven by the soft information provided by the news.

Pre-announcement media coverage could affect analysts' information environment as well as their forecasting ability. Lang et al. (2003) document that analyst following and forecast accuracy improve as a result of cross–listing in the US, suggesting that cross listing increases the amount of information available about a firm, which allows analysts to predict earnings more accurately. Lang and Lundholm (1996) find that firms with higher-quality disclosures have less dispersed forecasts and smaller forecast errors. Consistent with richness of information environments improving analyst

activities, I posit that pre-announcement media coverage is positively associated with analysts' information advantage and their ability to forecast earnings. Moreover, as analysts continuously learn useful information from the media, they will forecast earnings more frequently. Similarly, if analysts anticipate more of the earnings information prior to earnings announcements, they will gain less new information and be less likely to respond to earnings announcements. An alternative possibility is that analysts have access to superior information acquisition and processing technology or they can rely on their own research; thus, media coverage may not have incremental benefits for analysts in their earnings forecast activities.

Based on the preceding discussion, I state my first set of hypotheses in null forms:

H1: Pre-announcement news coverage is not associated with analysts' forecast accuracy or forecast activity.

2.2.3. Media Coverage and Investors' Earnings Expectations

My next hypothesis is related to investors' responses to earnings-related information. A number of studies have documented that information intermediaries such as financial analysts play important roles in the pricing of accounting information. For example, Zhang (2008) finds that post-earnings-announcement drift is significantly lower for firm-quarters in which analysts revise forecasts within two trading days after earnings announcements. Additionally, Mohanram (2014) documents that the mispricing of accruals is mitigated when financial analysts provide implicit forecasts of future

accruals through cash flow forecasts. However, there is scant research on how the media affects investors' reactions to accounting information. One exception is Drake et al. (2014) who find that press coverage over a two-day period starting with an earnings announcement mitigates cash flow mispricing but has a negligible effect on accrual mispricing. The authors attribute this effect to the media's information dissemination function rather than its role in information creation. In contrast to Drake et al. (2014), my study focuses on the impact of pre-disclosure media coverage on investors' earnings expectation formation and the incremental information content of earnings announcements.

The short-term effect of media coverage of specific corporate disclosures documented by prior literature is distinct from the effects over long pre-disclosure windows. Depending on the underlying relation between media coverage and the market responses to the disclosed information, the short-term relation could be consistent with a positive, neutral, or negative long-term relation between pre-announcement media coverage and the information content of earnings announcements. If media coverage is driven by the visibility of the firms (i.e., omitted variables), and media coverage is positively correlated with the amount of news contained in corporate disclosures, then the information content of earnings announcements may be larger for more visible firms with a higher level of media coverage. A second possibility is that the increased investor reaction following media coverage is driven by the speed of information transmission, in which case the long-window pre-announcement media coverage should not affect the information content of earnings announcements, as enough time would have elapsed for

earnings information to be fully reflected in all firms' prices. A third possibility is that media coverage improves earnings expectations and reduces the pre-disclosure information asymmetry between investors and managers, then the amount of new information in earnings (i.e., earnings surprise) will be smaller.

While earnings announcements reveal significant information about firms' economic conditions and generate significant price movements, the stock market anticipates much of the information associated with earnings news prior to the earnings announcement (Ball and Brown 1968; Beyer et al. 2010). The greater the pre-disclosure information, the smaller the earnings surprises. For example, Atiase (1985) shows that the amount of pre-disclosure information production and dissemination increases in firm size, hence large firms' earnings releases contain less "unexpected" information. Investors' reactions at the time of the earnings announcement depend on the pre-disclosure information asymmetry with managers and on the amount of new information in earnings (i.e., earnings surprise).

The business press collects and highlights newsworthy information about firms and widely distributes this information to the public throughout the year, which lowers investors' information acquisition and processing costs and increases the amount of information investors can assimilate. As media coverage could increase the diffusion of earnings information into stock prices ahead of earnings announcements, the information in earnings announcements could be preempted by high media coverage. Accordingly, I posit that the availability of relevant financial information due to media coverage improves investors' earnings expectations, facilitates the timely pricing of accounting

information prior to earnings announcements, and reduces the incremental information provided by public disclosures.[5] Formally, I state my second hypotheses in an alternative form:

H2: Pre-announcement news coverage is negatively associated with price revaluation during earnings announcements.

2.2.4. The links between pre-announcement media coverage and investors' reactions

Prior studies show that analysts' earnings forecasts significantly influence stock prices and can serve as a proxy for the market expectation of earnings (Beyer et al. 2010; Givoly 1985). Investors' responses to earnings announcements likely depend on whether the pre-announcement media coverage changes financial analysts' forecasting activities, which in turn can affect investors' anticipation of earnings and preempt the information in earnings announcements. While pre-announcement media coverage could directly lower investors' information processing and acquisition costs and improve their earnings expectations, as discussed in section 2.3., the pre-announcement media coverage could indirectly improve investors' anticipation of earnings by changing analyst forecast activities. Therefore, I conjecture that analyst forecast activity is a mechanism through

[5] Chapman (2018) finds that earnings notifications (i.e., short announcements of upcoming earnings announcements distributed via newswires) are associated with lower abnormal returns around earnings announcements, suggesting that earnings notifications grab investors' attention prior to earnings announcements and attenuate investors' attention to the earnings announcements. This study examines a broad range of media coverage over a long pre-announcement window. While earnings notifications are included in my pre-announcement media coverage sample, unlike Chapman (2018), the goal of my study is not to isolate the attention effect from the information effect of news coverage.

which the pre-announcement media coverage preempts the information content in earnings announcements. Accordingly, I state my third hypothesis in an alternative form:

H3: Pre-announcement news coverage indirectly affects price revaluation around earnings announcements through changes in analyst forecast activity.

2.3. Research Design

2.3.1. Financial Analyst Forecasts

To examine whether pre-announcement media coverage helps financial analysts to anticipate future earnings (H1), I test several aspects of analyst forecasts by estimating the following equation:

$$ACCURACY_{it}\ (or\ FREQ_{it}\ or\ RESP_{it}) = \beta_0 + \beta_1 COV\_NONREP\_NA_{it} + \sum \beta_k\ Controls\ + \sum \gamma_k\ YearFE\ + \sum \gamma_k\ IndustryFE + \varepsilon. \quad (2.1)$$

The first dependent variable in equation (2.1) is analysts' relative forecast accuracy (*ACCURACY*). It is defined as the difference between a particular absolute consensus forecast error issued during the nonreport period (i.e., the sixty-trading day window ending two days prior to the earnings announcement date [-61, -2]) and the corresponding absolute time-series forecast error, scaled by stock price at the beginning of the fiscal year. This variable captures the value added by financial analysts (Kross et al. 1990; Bailey et al. 2003). The second dependent variable in equation (2.1) is analyst forecast frequency (*FREQ*), as measured by the average number of earnings forecasts that an analyst made for a particular firm during the nonreport period. This measure captures analysts' responsiveness to pre-announcement information, as analysts who

respond to information are likely to update their forecasts frequently (Jacob et al. 1999). The third dependent variable in equation (2.1) is analyst responsiveness to earnings announcements (*RESP*), defined as the number of individual earnings forecasts issued within 3 trading days [0, +2] after earnings announcements. This variable captures whether analysts are responsive to incremental new information in earnings announcements (Zhang 2008).

The variable of interest is the media coverage that is not directly related to analyst forecasts during the nonreport period (*COV_NONREP_NA*). If media coverage helps analysts to better anticipate the information in the coming earnings announcements, then media coverage should increase analysts' forecast accuracy relative to time-series earnings forecasts and also increase the value of the forecasts to investors. Moreover, if the business press increases analysts' opportunities to acquire information prior earnings announcements, then they should update their forecasts more frequently. In this case, I expect β_1 to be positive in equation (2.1) when the dependent variable is *ACCURARY* or *FREQ*. Similarly, they may be less inclined to rely on earnings announcements as they contain limited new information (i.e., $\beta_1 < 0$) when the dependent variable is *RESP*. However, if analysts do not gain incremental benefits from media coverage, then β_1 will not be significantly different from zero.

Following prior literature (e.g., Hutton et al. 2012; Hughes et al. 2008), equation (2.1) includes a number of controls for a firm's general information environment that are related to analyst forecasts: firm size (*SIZE*), book-to-market ratio (*BM*), and leverage (*LEV*). Larger firms tend to have better information environment but more complex

operations. Firms with low book-to-market ratio tend to have more growth opportunities and have greater uncertainty. Leverage is an important determinant of a firm's information environment because of scrutiny and monitoring by debt holders. Additionally, I control for a firm's forecasting difficulty using *LOSS* and *STD_EARN*. Loss firms are generally associated with high information uncertain, and higher earnings volatility (*STD_EARN*) is generally associated with higher forecasting difficulty. Similar to Drake et al. (2014) and Bonsall et al. (2018a), I include the amount of firm-initiated material event disclosures (*8KS_NONREP*), analyst following (*LN_ANALYSTS*), institutional ownership (*INSTOWN*), an indicator for outstanding credit ratings (*RATED*), the number of employees (*EMP*), and membership in the S&P 500 (*SP500*) in order to further control for the determinants of media coverage. When the dependent variable is *RESP*, I include two additional variables, *COV_EA* and *LAG*, to control for media coverage during the earnings announcement window and other information available prior to earnings announcements. Lastly, I include year fixed effects and industry fixed effects to control for time trends and unobservable industrial variations. I use firm-clustered standard errors to account for possible correlation across residuals within the same firm.

2.3.2. Investors' Responses to Earnings Announcements

To test H2, I estimate the following cross-sectional OLS regression:

$$RI_{it} = \beta_0 + \beta_1 COV\_NONREP_{it} + \sum \beta_k Controls + \sum \gamma_k YearFE + \sum \gamma_k IndustryFE + \varepsilon, \quad (2.2)$$

where *RI* is the absolute value of the three-day excess return during the report period, divided by the mean absolute abnormal returns in 20 successive three-day periods in the nonreport period. I define the report period as the three-day window around the earnings announcement date [-1, +1] and the nonreport period as the sixty-trading day window ending two days prior to the earnings announcement date [-61, -2]. *RI* controls for nonreport period information and measures the absolute market reactions around earnings announcements. Therefore, this variable captures the new information conveyed by the earnings release relative to the information that was available during the estimation period.[6]

My variable of interest is *COV_NONREP* (i.e., nonreport period media coverage).[7] If pre-announcement media coverage helps investors better anticipate earnings-related information, then investors would be less "surprised" by earnings announcements, that is, $\beta_1 < 0$. I control for analyst forecast frequency (*RREQ*), analyst responsiveness (*RESP*), and media coverage around earning announcement (*COV_EA*). Following prior literature (e.g., Atiase et al. 1989; El-Gazzar 1998; Beaver et al. 2018), I

[6] Because the study is mainly concerned with the magnitude rather than the direction of price reactions, I follow prior literature (e.g., Atiase et al. 1989; El-Gazzar 1998; Roychowdhury and Sletten 2012) in using the revaluation index, which is based on the absolute value of unexpected returns, abstracting from the sign of the unexpected returns. Later, I use squared residual returns similar to Landsman et al. (2012), for a robustness check. Also, I use a random three-day window return as the scalar similar to Roychowdhury and Sletten (2012), to alleviate the concern about a potential mechanical relation between *RI* and *COV_NONREP*.

[7] Throughout my analyses, I use media coverage calculated as the natural logarithm of 1 plus the total number of articles (Bushee et al. 2010). My results are robust to using the raw number of articles in the media. Additionally, I repeat my main analyses using a firm's *abnormal* media coverage, which is defined as the difference between a firm's total number of articles reported and its industry average total number of news reports during certain pre-announcement periods. The main inferences do not change (not tabulated).

include several factors related to the firm's earnings-related information environment: firm size (*SIZE*), reporting timeliness (*LAG*), analyst following (*LN_ANALYSTS*), institutional holdings (*INSTOWN*), and an indicator for loss (*LOSS*). I also two dummy variables for both standalone management guidance and management guidance bundled with earnings announcements (*MF_ALONE* and *MF_BUNDLE*, respectively). Lastly, I control for firm-initiated material event disclosures (*8KS_NONREP*), an indicator for outstanding credit ratings (*RATED*), the number of employees (*EMP*), and membership in the S&P 500 (*SP500*), and fixed effects.

2.3.3. The Indirect Effect of Analyst Forecasts on Investors' Reactions

To test my H3, I use a structural equation model (SEM) to simultaneously examine the relations and paths among pre-announcement media coverage, analyst forecast activity, and price revaluation around earnings announcements.[8] SEM allows me to examine the relative strength of the direct paths of pre-announcement media coverage affecting analyst forecasting activity *(*H1) and the information content of earnings announcement (H2), as well as the indirect path of analyst forecasting activity affecting the information content of earnings announcement (H3). I use analysts' forecast frequency (*FREQ*) as a proxy for their forecasting activity. Following prior

[8] The path analysis embedded in a structural equation model (SEM) allows estimations of multiple relationships simultaneously to examine direct and indirect effects. SEM includes measurement models that account for the measurement error in the latent variables, and path analysis models that allow for the examination of relationships among multiple dependent variables (Kline, 2015). Path analysis within SEM has been recently used in the accounting research to examine direct and indirect effects while taking into account measurement errors in both dependent and independent variables (e.g., Bhattacharya et al., 2012; Landsman et al. 2012; Mattei and Platikanova 2017; Bonsall et al. (2018a)).

studies that use path analysis (e.g., Landsman et al. 2012; Mattei and Platikanova 2017), to decompose the relation between media coverage and price revaluation into a direct path and indirect path, I estimate the following model:

$$RI_{it} = \beta_0 + \beta_1 COV\_NONREP_{it} + \gamma_1 FREQ_{it} + \sum \beta_k Controls + \sum \gamma_k YearFE + \sum \gamma_k IndustryFE + \varepsilon, \quad (2.3a)$$

$$FREQ_{it} = \alpha_0 + \alpha_1 COV\_NONREP_{it} + \sum \alpha_k Controls + \sum \alpha_k YearFE + \sum \alpha_k IndustryFE + \varepsilon. \quad (2.3b)$$

In this estimation system, the path coefficient β_1 is the magnitude of the direct path from media coverage to investors' responses to earnings announcement. The path coefficient $\gamma_1 \times \alpha_1$ is the magnitude of indirect path from media coverage to investors' responses to earnings announcement through analyst forecast frequency. I use the same control variables in equation (2.1) and equation (2.2). Year and industry fixed effects are also included in the estimation.

To provide complementary evidence, I then test the cross-sectional variation in the effect of *COV_NONREP* on *RI*, using the following regression:

$$RI_{it} = \beta_0 + \beta_1 COV\_NONREP_{it} + \beta_2 RANK\_FREQ_{it} \ (or\ RANK\_ANALYSTS_{it}) + \beta_3 RANK\_FREQ_{it} \ (or\ RANK\_ANALYSTS_{it}) \times COV\_NONREP_{it} + \sum \beta_k Controls + \sum \gamma_k YearFE + \sum \gamma_k IndustryFE + \varepsilon. \quad (2.4)$$

Equation (2.4) introduces indicator variables for the number of analysts following the firm or the level of analyst forecast activity (*RANK_ANALYSTS* and *RANK_FREQ*), which are the tercile rank of analyst forecast frequency (*FREQ*) and the number of analysts following the firm (*LN_ANALYSTS*). I use the number of analysts

following the firm (*LN_ANALYSTS*) to capture a firm's overall exposure to analyst forecast information, and the number of earnings forecasts issued (*FREQ*) to capture analysts' responsiveness to information. A significant and negative coefficient on the interaction term, β_3, would suggest that the preempting effect of pre-announcement media coverage on the incremental information content of earnings announcements is more pronounced when analyst forecasts provide more information.

2.4. Sample Selection and Descriptive Statistics

2.4.1. Sample Selection

I begin my sample selection with the universe of firms listed on the NYSE, AMEX and NASDAQ markets, with December 31 fiscal year ends and with non-penny common stocks (i.e., stocks with price-per-share of less than $1.00 at the fiscal year end) from 2000 to 2016.[9] I obtain financial data from COMPUSTAT, stock price data from CRSP, financial analyst data and management guidance data from I/B/E/S, and institutional ownership data from Thomson Reuters. I eliminate financial institutions (two-digit GICS code = 40); require each six-digit GICS industry in a year to have at least 4 firms; and require non-missing data for key variables. I use the Global Industry Classification Standard (GICS) as my industry classification scheme because it is consistent from year to year and provides a better grouping of firms for capital market-based research (Bhojraj et al. 2003; Hui et al 2016). The final sample contains 26,984

[9] I limit my sample to firms with a December 31 fiscal year-end because prior research finds that non-December 31 firms are likely subject to preemption of earnings news by other firms (Beaver et al 2018).

firm-year observations. Table E-1 of Appendix E outlines the sample selection process.

I obtain news coverage data from the RavenPack Dow Jones Edition 4.0 dataset of real-time news coverage from 2000 to 2016. RavenPack provides data analytics for all news items disseminated via the Dow Jones Newswire service, which includes Dow Jones Newswires, the Wall Street Journal, Barron's, and MarketWatch. RavenPack classifies a news article into news event categories (such as earnings, product releases, and business contracts, etc.) and also assigns a relevance score between 0 and 100 to indicate how strongly the firm is related to the associated news story.[10, 11] Following Weller (2018), I exclude news events on trading or prices (i.e., technical analysis signals, stock price movements, order imbalance reports) and announcements of future disclosure dates (investor relations items). I merge the RavenPack database with COMPUSTAT/CRSP data using RavenPack's ISIN (or CUSIP) firm identifiers. Appendix B summarizes the types of news events that comprise my media coverage sample. The two most common news types are earnings-related and insider trading-related news.[12]

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[10] The Dow Jones Edition of RavenPack is commonly used in prior research that investigates the role of media (Drake et al. 2014; Twedt 2016; Bonsall et al. 2018a; Rogers et al. 2016). Bonsall et al. (2018a) show that pairwise correlations between RavenPack Dow Jones news coverage and RavenPack web edition news coverage (including a more comprehensive news sources such as Bloomberg, NBC, Yahoo!, etc.) exceed 90%. However, I acknowledge that the data is limited to national coverage through the Dow Jones news group. Therefore, my sample represents a lower bound for the total amount of information produced and disseminated by the media.

[11] If a company is mentioned in the news article but plays an unimportant role, it gets a low relevance score. For example, in the story "Moody's Assigns Freescale Ba3 Rating" on 11/03/2006, Freescale receives a relevance score of 100, while Moody's (the rater) receives a relevance score of 20. All news reports with an event category assigned to it have a relevance score of 100, which ensures that the article is primarily about the firm in question.

[12] The distribution of news event types is similar to that in a recent RavenPack research report (Hafez and Xie 2014). The high percentage of insider trading news reports is not surprising, because Form Type 4

I summarize the distribution of the sample across years and industries in Table E-2 and Table E-3, respectively, of Appendix E. Table E-2 shows that my sample is fairly evenly distributed across years. Table E-3 shows that software, pharmaceuticals, and energy are the largest industry groups in my sample, together representing about 30% of the sample. This proportion is very similar to that of the Compustat population.

2.4.2. Descriptive Statistics

Panel A of Table 2.1 provides descriptive statistics on the main variables in my analyses. Log-transformed nonreport period media coverage, *COV_NONREP*, has a mean value of 2.23, meaning that the average number of news reports that firms in my sample have during the non-report period is 14.64. After excluding the news articles directly related to analyst forecasts, the mean of log-transformed nonreport period media, *COV_NONREP_NA*, is 2.16. On average, analysts issue 5.58 and 4.61 earnings forecasts during the nonreport and event periods, respectively. Sample firms are covered by 11 analysts on average. 27.3% of firms in our sample experience a loss in a particular year. Additionally, both the mean value and median value of revaluation index (*RI*) are greater than 1, suggesting that the new information conveyed by the earnings release is greater than the information available during the nonreport period. To reduce the possibility that my inferences are influenced by extreme observations, I winsorize all

(ownership form) is the most frequent SEC filing type and SEC filings are important news sources for the media. For example, from June 25, 2014 to October 15, 2014, 52% of SEC filings were Form 4 filings (Jackson et al. 2016).

continuous variables (except for stock returns) at the 1st and 99th percentiles of their distributions. All variables are defined in Appendix A.

Panel B of Table 2.1 reports the time trends of the revaluation index (*RI*), market value (*MVE*), and the number of news articles during the nonreport period. The information content of earnings announcements (*RI*) has a positive time trend, with a dip in 2007 and 2008.[13] This table also shows that media coverage in recent years is much higher than in earlier years, indicating that it is necessary to control for year fixed effects in my analyses. Panel C of Table 2.1 provides pairwise correlations among the main variables used in my analyses. As expected, media coverage is positively correlated with firm size (*SIZE*), analyst following (*LN_ANALYST*), and institutional ownership (*INSTOWN*).

[13] The time trend is consistent with the findings in Beaver et al. (2018). They also document an overall increase in information content at earnings announcements over the past decade and a decline at the time of the financial crisis.

Table 2.1 Summary statistics
Panel A: Descriptive statistics

Variable	N	MEAN	STD	P10	P25	P50	P75	P90
COUNT_NONREP_NA	26,984	13.779	17.064	0	4	9	18	31
COV_NONREP_NA	26,984	2.161	1.118	0	1.609	2.303	2.944	3.466
COUNT_NONREP	26,984	14.641	17.561	0	4	10	19	33
COV_NONREP	26,984	2.233	1.109	0	1.609	2.398	2.996	3.526
COUNT_EA	26,984	7.423	5.749	2	4	6	9	14
COV_EA	26,984	1.893	0.760	1.099	1.609	1.946	2.303	2.708
ACCURACY	21,249	0.020	0.094	-0.006	0.000	0.004	0.016	0.054
FREQ	26,984	5.576	9.013	0	1.000	2.000	6.000	14.000
RESP	26,984	4.606	5.314	0	1	3	7	12
RI	26,984	2.199	2.142	0.265	0.679	1.555	2.986	4.988
RI_U	25,261	4.608	7.740	0.259	0.691	1.850	4.828	11.692
RI_RAND	26,984	8.255	23.916	0.274	0.751	2.008	5.521	15.328
SIZE	26,984	6.979	1.714	4.800	5.770	6.905	8.082	9.277
BM	26,984	0.494	0.386	0.119	0.242	0.420	0.649	0.944
LOSS	26,984	0.273	0.446	0	0	0	1	1
LEV	26,984	0.247	0.227	0	0.032	0.224	0.385	0.535
STD_EARN	26,984	0.058	0.097	0.004	0.012	0.027	0.063	0.136
ANALYSTS	26,984	11.137	8.913	2	5	9	15	23
LN_ANALYSTS	26,984	2.232	0.749	1.099	1.792	2.303	2.773	3.178
INSTOWN	26,984	0.588	0.308	0	0.373	0.666	0.838	0.944
8KS_NONREP	26,984	1.947	2.122	0	0	1	3	5
EMP	26,984	11.141	35.433	0.116	0.423	1.876	7.799	25
SP500	26,984	0.171	0.376	0	0	0	0	1
RATED	26,984	0.302	0.459	0	0	0	1	1
LAG	26,984	45.617	15.164	26	33	45	56	67
MF_ALONE	26,984	0.361	0.480	0	0	0	1	1
MF_BUNDLE	26,984	0.292	0.455	0	0	0	1	1

Table 2.1 (Continued)
Panel B: Time Trends

	Revaluation Index (*RI*)		Market value (*MVE*)		Number of news articles during nonreport period (*COUNT_NONREP*)	
Year	Mean	Std. Err.	Mean	Std. Err.	Mean	Std. Err.
2000	1.151	0.026	3911.791	305.154	4.999	0.232
2001	1.521	0.037	3494.524	278.734	7.853	0.335
2002	1.662	0.042	2956.207	235.186	8.370	0.312
2003	2.054	0.050	3768.680	274.559	10.433	0.353
2004	2.174	0.051	4116.952	274.493	18.676	0.523
2005	2.382	0.053	4309.255	285.897	16.456	0.550
2006	2.387	0.057	4596.398	295.551	20.113	0.574
2007	2.204	0.050	4666.852	279.830	17.831	0.479
2008	1.863	0.042	3189.931	229.274	13.502	0.355
2009	2.151	0.051	4013.454	256.159	16.055	0.464
2010	2.490	0.060	4797.050	290.482	17.984	0.515
2011	2.166	0.051	4925.415	317.879	16.015	0.436
2012	2.450	0.057	5533.971	347.116	17.551	0.473
2013	2.731	0.066	7311.759	450.697	15.246	0.398
2014	2.447	0.057	7557.782	443.544	16.072	0.369
2015	2.655	0.059	6937.112	436.910	14.573	0.353
2016	2.604	0.061	7629.450	469.317	14.893	0.368
Overall	2.199	2.142	4984.066	13505.980	14.641	17.561

Table 2.1 (Continued)
Panel C: Pairwise Correlations (asterisks indicate significant at 1% level)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	*ACCURACY*	1										
(2)	*FREQ*	0.0622*	1									
(3)	*RESP*	-0.0088	0.4894*	1								
(4)	*RI*	-0.0248*	-0.0493*	0.1403*	1							
(5)	*COV_NONREP*	-0.0113	0.2865*	0.3179*	0.0401*	1						
(6)	*COV_EA*	0.0221*	0.2086*	0.3048*	0.1116*	0.6364*	1					
(7)	*COV_NONREP_NA*	-0.0130	0.2663*	0.3000*	0.0440*	0.9910*	0.6167*	1				
(8)	*SIZE*	-0.0912*	0.4893*	0.5250*	0.0533*	0.4548*	0.3837*	0.4357*	1			
(9)	*BM*	0.2440*	-0.0345*	-0.1926*	-0.0688*	-0.1716*	-0.0975*	-0.1665*	-0.2983*	1		
(10)	*LOSS*	0.1560*	-0.0871*	-0.0801*	-0.0752*	-0.0981*	-0.1305*	-0.0920*	-0.3375*	0.0868*	1	
(11)	*LEV*	0.0395*	0.0602*	-0.0325*	-0.0582*	0.0746*	0.0388*	0.0694*	0.1975*	-0.0705*	-0.0330*	1
(12)	*STD_EARN*	0.1268*	-0.0627*	-0.0419*	-0.0239*	-0.0877*	-0.0894*	-0.0818*	-0.2414*	-0.0788*	0.3221*	-0.1099*
(13)	*LN_ANALYSTS*	0.0204*	0.5725*	0.6873*	0.0638*	0.3895*	0.3514*	0.3593*	0.7127*	-0.1855*	-0.1344*	0.0799*
(14)	*INSTOWN*	0.0191*	0.1359*	0.2264*	0.1102*	0.3191*	0.3079*	0.3048*	0.2941*	-0.0883*	-0.1571*	0.0297*
(15)	*8KS_NONREP*	-0.0045	0.1775*	0.0625*	-0.0416*	0.2939*	0.0835*	0.3025*	0.1567*	-0.0364*	0.0127	0.1224*
(16)	*LAG*	-0.0053	-0.2880*	-0.3110*	-0.0229*	-0.1871*	-0.2091*	-0.1717*	-0.4436*	0.1090*	0.1989*	0.0418*
(17)	*MF_ALONE*	-0.0215*	0.0047	0.1155*	0.0714*	0.1805*	0.2333*	0.1786*	0.2477*	-0.0683*	-0.2396*	0.0014
(18)	*MF_BUNDLE*	-0.0427*	-0.0058	0.1443*	0.0982*	0.1727*	0.2570*	0.1718*	0.2532*	-0.0989*	-0.2248*	0.003
(19)	*EMP*	-0.0025	0.1982*	0.2384*	0.0202*	0.2108*	0.2230*	0.2100*	0.3841*	-0.0465*	-0.1225*	0.0438*
(20)	*SP500*	-0.0143	0.4253*	0.3918*	-0.0036	0.3061*	0.3336*	0.2975*	0.6487*	-0.1008*	-0.1806*	0.0798*
(21)	*RATED*	0.0617*	0.2337*	0.1028*	-0.0513*	0.1951*	0.1961*	0.1833*	0.4042*	0.0525*	-0.1579*	0.2993*

		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(12)	*STD_EARN*	1									
(13)	*LN_ANALYSTS*	-0.1073*	1								
(14)	*INSTOWN*	-0.0973*	0.3064*	1							
(15)	*8KS_NONREP*	-0.0095	0.1264*	0.0914*	1						
(16)	*EMP*	0.0636*	-0.3925*	-0.1846*	0.0476*	1					
(17)	*SP500*	-0.1425*	0.2204*	0.1651*	0.0168*	-0.1757*	1				
(18)	*RATED*	-0.1366*	0.2112*	0.1728*	0.0135	-0.1551*	0.7264*	1			
(19)	*LAG*	-0.0902*	0.2663*	0.0597*	0.0479*	-0.2112*	0.1513*	0.1415*	1		
(20)	*MF_ALONE*	-0.1191*	0.4843*	0.1340*	0.0926*	-0.3391*	0.2066*	0.1997*	0.3773*	1	
(21)	*MF_BUNDLE*	-0.1437*	0.2953*	0.1016*	0.1203*	-0.2337*	0.1552*	0.1350*	0.1885*	0.3705*	1

2.5. Main Empirical Results

2.5.1. Analysts' Responses to Pre-announcement Media Coverage

Table 2.2 examines the relation between analyst forecast characteristics and the intensity of pre-announcement media coverage and reports the regression results of equation (2.1). In column (1), the coefficient on pre-announcement media coverage (*COV_NONREP_NA*) is positive and significant ($\beta = 0.003$, p-value < 0.01), suggesting that analysts' forecasts are more accurate than time-series earnings forecasts, hence are more valuable to investors, when pre-announcement media coverage is higher. In column (2), the coefficient on pre-announcement media coverage is positive and significant ($\beta = 0.435$, p-value < 0.01), providing evidence that analysts' forecast frequency is increasing in news coverage during the nonreport period. In column (3), the coefficient on pre-announcement media coverage is negative and significant ($\beta = -0.105$, p-value < 0.05), suggesting that analysts are less responsive to earnings announcements when the firm has greater news coverage prior to earnings announcements. In columns (4) – (6), I include firm fixed effects to control for time-invariant firm factors that can influence the intensity of media coverage. All my results hold. This suggests that the relation between pre-announcement media coverage and analyst forecast activities is not driven by unobserved time-invariant firm heterogeneity.

Taken together, the results in Table 2.2 indicate that pre-announcement news coverage improves analysts' earnings expectations and stimulates analyst forecast activity prior to earnings announcements, supporting my prediction in H1. In other words, the business press serves as an important information source for financial

analysts.

Table 2.2 The Effect of Pre-announcement Media Coverage on Analyst forecasts (H1)

VARIABLES	(1) *ACCURACY*	(2) *FREQ*	(3) *RESP*	(4) *ACCURACY*	(5) *FREQ*	(6) *RESP*
COV_NONREP_NA	0.003***	0.435***	-0.105**	0.002***	0.403***	-0.158***
	(0.001)	(0.000)	(0.037)	(0.005)	(0.000)	(0.000)
SIZE	-0.002**	0.519***	0.454***	-0.014***	0.698***	0.584***
	(0.034)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BM	0.051***	1.438***	0.133	0.054***	1.101***	0.368***
	(0.000)	(0.000)	(0.176)	(0.000)	(0.000)	(0.000)
LOSS	0.027***	0.282*	-0.031	0.038***	0.236**	-0.099
	(0.000)	(0.057)	(0.679)	(0.000)	(0.030)	(0.101)
LEV	0.028***	-1.741***	-0.141	0.027***	0.901***	0.574***
	(0.000)	(0.000)	(0.435)	(0.000)	(0.001)	(0.002)
STD_EARN	0.134***	2.584***	-0.581**	0.149***	0.039	-0.584*
	(0.000)	(0.000)	(0.043)	(0.000)	(0.928)	(0.056)
LN_ANALYSTS	0.012***	4.291***	-0.447***	0.006	3.674***	-0.317**
	(0.000)	(0.000)	(0.010)	(0.166)	(0.000)	(0.028)
INSTOWN	0.010***	-0.180	3.781***	0.010***	-1.029***	2.952***
	(0.000)	(0.578)	(0.000)	(0.000)	(0.000)	(0.000)
8KS_NONREP	-0.000	0.245***	-0.049**	0.000	0.285***	-0.040***
	(0.508)	(0.000)	(0.011)	(0.800)	(0.000)	(0.002)
EMP	-0.000	0.004	0.003	-0.000	0.014**	0.015***
	(0.531)	(0.281)	(0.134)	(0.142)	(0.036)	(0.000)
SP500	0.000	4.399***	1.247***	-0.000	3.190***	1.197***
	(0.849)	(0.000)	(0.000)	(0.979)	(0.000)	(0.000)
RATED	0.007***	-0.342*	-0.728***	0.003	-0.709***	-0.516***
	(0.003)	(0.081)	(0.000)	(0.166)	(0.000)	(0.000)
LAG			-0.014***			-0.022***
			(0.000)			(0.000)
COV_EA			0.260***			0.256***
			(0.000)			(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	No	No	No
Firm fixed effects	No	No	No	Yes	Yes	Yes
Constant	-0.039***	-7.686***	-8.972***	0.038**	-9.495***	-7.743***
	(0.000)	(0.000)	(0.000)	(0.017)	(0.000)	(0.000)
Observations	21,249	26,984	26,984	21,249	26,984	26,984
R-squared	0.168	0.489	0.571	0.370	0.739	0.749

2.5.2. Investors' Responses to Pre-announcement Media Coverage

To test H2, Table 2.3 examines the relation between the information content of earnings announcements and the intensity of pre-announcement media coverage. Column (1) reports the result of estimating equation (2.2), without controlling for analyst forecast activity (*FREQ* and *RESP*). The coefficient on pre-announcement media coverage (*COV_NONREP*) is negative and significant ($\beta = -0.192$, p-value < 0.01), suggesting that the information content of earnings announcements decreases in the intensity of media coverage during the nonreport period. The coefficient on media coverage around earnings announcement (*COV_EA*) is significant and positive, suggesting that media coverage during the event window helps investors better process earnings news and increases the relative market reaction to earnings announcements. While *COV_NONREP* and *COV_EA* are significantly correlated, it seems that they have different effects on the informational role of earnings announcements. On the one hand, this finding is consistent with prior studies showing stronger price reactions after specific company disclosures for firms with high media coverage. On the other hand, it is consistent with my prediction of a weaker relative price reaction at earnings announcements for firms with higher pre-announcement media coverage.

In Column (2), I include proxies for analyst forecast activity (*FREQ* and *RESP*). The coefficient on *COV_NONREP* remains significantly negative. From an economic perspective, the coefficient on *COV_NONREP* is -0.174, which represents approximately a 0.174% decrease in the relative abnormal return around earnings announcements for a 1% increase in the number of news report during the nonreport

period.

Table 2.3 The Effect of Pre-announcement Media Coverage on Price Revaluation (H2)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	*RI*	*RI*	*RI*	*RI_U*	*RI_RAND*
COV_NONREP	-0.192***	-0.174***	-0.166***	-0.493***	-0.948***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FREQ		-0.022***	-0.024***	-0.069***	-0.040*
		(0.000)	(0.000)	(0.000)	(0.092)
RESP		0.048***	0.056***	0.158***	0.165***
		(0.000)	(0.000)	(0.000)	(0.001)
COV_EA	0.290***	0.270***	0.298***	0.859***	1.627***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	0.069***	0.051***	0.065**	0.133**	0.210
	(0.000)	(0.003)	(0.022)	(0.041)	(0.211)
LAG	-0.001	-0.001	0.000	-0.015***	-0.011
	(0.426)	(0.245)	(0.792)	(0.001)	(0.344)
LN_ANALYSTS	0.055*	-0.032	-0.078*	0.027	-0.862**
	(0.070)	(0.319)	(0.069)	(0.824)	(0.016)
INSTOWN	0.260***	0.277***	0.018	0.905***	0.195
	(0.000)	(0.000)	(0.840)	(0.000)	(0.723)
LOSS	-0.205***	-0.193***	-0.104**	-0.647***	-1.086***
	(0.000)	(0.000)	(0.013)	(0.000)	(0.003)
MF_ALONE	-0.042	-0.026	-0.079*	0.175	0.990**
	(0.288)	(0.511)	(0.080)	(0.251)	(0.025)
MF_BUNDLE	0.173***	0.137***	0.116**	0.394**	-0.458
	(0.000)	(0.001)	(0.015)	(0.019)	(0.321)
8KS_NONREP	-0.038***	-0.030***	-0.037***	-0.115***	-0.054
	(0.000)	(0.000)	(0.000)	(0.000)	(0.467)
RATED	0.064	0.090**	0.224***	0.095	-0.108
	(0.118)	(0.026)	(0.000)	(0.522)	(0.796)
EMP	-0.001**	-0.001***	-0.001	-0.004	-0.002
	(0.010)	(0.004)	(0.504)	(0.149)	(0.738)
SP500	-0.282***	-0.237***	-0.103	-0.920***	-0.993*
	(0.000)	(0.000)	(0.249)	(0.000)	(0.068)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	Yes	Yes
Firm fixed effects	No	No	Yes	No	No
Constant	-0.078	0.296**	0.554***	-0.721	3.777**
	(0.606)	(0.050)	(0.005)	(0.184)	(0.026)
Observations	26,984	26,984	26,984	25,261	26,984
R-squared	0.105	0.114	0.257	0.104	0.014

The negative and significant coefficient on *FREQ* suggests that analysts' forecasting activities prior to earnings announcements preempts the information in

earnings announcements. The positive and significant coefficient on *RESP* suggests analysts' activities during announcement window help the market better process earnings information or provide more information in the announcement period.

Column (3) shows the results of a firm-fixed effect regression, to remove omitted time-invariant firm factors that may lead to spurious correlations between media coverage and investors' anticipation of earnings-related information prior to earnings announcements. The coefficient on *COV_NONREP* remains significant and negative. In Column (4), I use an alternative market revaluation measure based on squared standardized residual returns to test the robustness of my results. This measure is used in prior studies (Beaver 1968; Landsman et al. 2012; Beaver et al. 2018). In Column (5), I construct another revaluation index measure using the ratio of the absolute value of cumulative abnormal return during the event window, to the absolute value of cumulative abnormal return during a random three-day window in the nonreport period. This measure (*RI_RAND*) aims to mitigate the possible mechanical correlation between pre-announcement media coverage and returns during the nonreport period. The results in Columns (4) and (5) show that the relation between pre-announcement media coverage and price revaluation is robust to using these two alternative measures.

Overall, these results suggest that media coverage facilitates the incorporation of information prior to earnings announcements, and investors are less "surprised" by the information contained in earnings releases when pre-announcement media coverage is higher, consistent with my prediction in H2. Moreover, the effect of pre-announcement media coverage is significant after controlling for analyst forecast activities, firm-

initiated disclosures, a wide range of variables that captures cross-sectional differences in firm characteristics, and firm and year fixed effects.

2.5.3. Path and Cross-sectional Analysis

This section examines whether pre-announcement media coverage has an indirect effect on investors' responses to earnings announcement through analyst forecast frequency, as a proxy for analyst forecast activity. Table 2.4 presents the unstandardized path coefficients from the SEM estimation. Column (1) reports the direct effect of pre-announcement media coverage (*COV_NONREP*) on analyst forecast frequency (*FREQ*), as well as the direct effect of pre-announcement media coverage (*COV_NONREP*) on revaluation index (*RI*). Column (2) reports the indirect path from media coverage to revaluation index mediated through analyst forecast frequency. The direct effect of -0.174 relative to the total effect of -0.185 represents a mediated effect. The total mediated path for management forecast is significantly negative (0.486× (-0.022) = -0.011, p-value < 0.01), suggesting that pre-announcement media coverage has a significant indirect effect on price revaluation during earnings announcements through the frequency of issuing analyst forecasts.

Figure 2.1 presents the basic path diagram of both direct and indirect path paths between pre-announcement media coverage and the market response to earnings news; the standardized path coefficients estimates are presented on each path. Approximately 5% of the total effect of media coverage on price revaluation is mediated through analyst forecast. This indirect effect is significant (p-value < 0.01), suggesting that analyst

forecast is an important driver of decreased information content of earnings announcements.

Table 2.4 The Effect of Media Coverage on Price Revaluations through Analyst Forecasts (H3)

	Direct (1)	Indirect (2)	Total (3)
FREQ			
COV_NONREP	0.486*** (5.31)		0.486*** (5.31)
RI			
FREQ	-0.022*** (-10.91)		-0.022*** (-10.91)
COV_NONREP	-0.174*** (-9.59)	-0.011*** (-4.88)	-0.185*** (-10.15)
N	26,984		

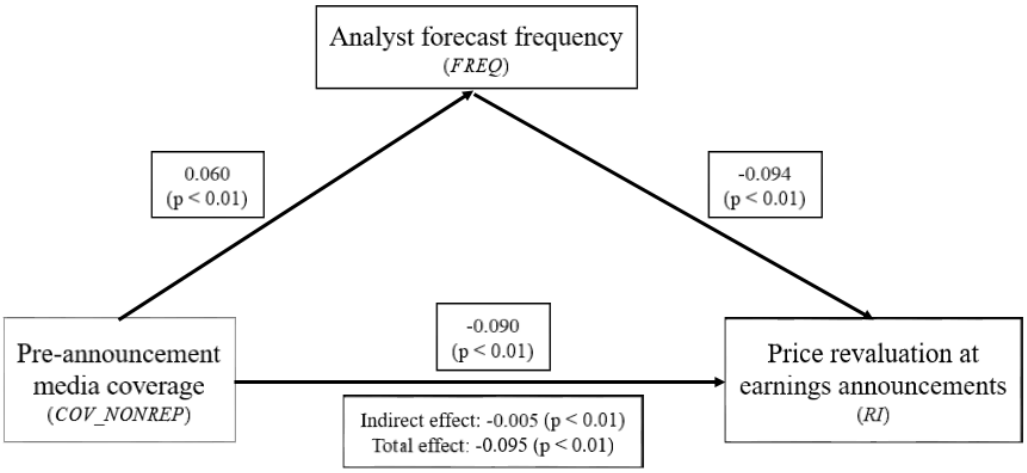

Figure 2.1 Path Analysis through Analyst Forecast Activity

As complementary analysis, I examine the cross-sectional variations in the relation between pre-announcement media coverage and information content o earnings

based on analyst forecasts. To construct the partitioning variables, I use the number of analysts following the firm (*LN_ANALYSTS*) to capture a firm's overall analyst exposure, and the number of earnings forecasts issued (*FREQ*) to capture analysts' responsiveness to information. The correlation coefficient between *LN_ANALYSTS* and *FREQ* is 0.572 (p-value < 0.01), and the correlation coefficient between *RANK_ANALYSTS* and *RANK_FREQ* is 0.643 (p-value < 0.01). While *LN_ANALYSTS* and *FREQ* are highly correlated, they intend to capture different perspective of analyst forecasts.

Table 2.5 reports the estimation of equation (2.4). In column (1), the coefficient on *COV_NONREP*RANK_FREQ* is significantly negative at the 0.01 level, indicating the role of pre-announcement media coverage in preempting information in earnings announcements is more pronounced when analyst forecast is more frequent. In column (2), the coefficient on *COV_NONREP*RANK_ANALYSTS* is significantly negative at the 1 percent level, indicating that the strength of the negative relation between media coverage and price revaluation at earnings announcements increases with the number of analysts following the firm. The evidence is consistent with financial analysts playing an important role in strengthening the effect of the media in forming investors' earnings expectations.

Table 2.5 Cross-Sectional Variation in Price Revaluation based on Analyst Forecasts (H3)

VARIABLES	(1) *RI*	(2) *RI*
COV_NONREP	-0.067*	-0.063*
	(0.057)	(0.076)
*COV_NONREP*RANK_FREQ*	-0.058***	
	(0.000)	
*COV_NONREP*RANK_ANALYSTS*		-0.059***
		(0.000)
RANK_FREQ	-0.019	-0.153***
	(0.621)	(0.000)
RANK_ANALYSTS	-0.054*	0.078*
	(0.060)	(0.068)
Controls	Yes	Yes
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Constant	0.220	0.225
	(0.173)	(0.161)
Observations	26,984	26,984
R-squared	0.112	0.112

2.6. Enhancing Identification

2.6.1. Instrumental Variable Tests

A potential concern with my main analyses is the endogeneity of media coverage, which could be affected by correlated omitted variables. For example, the media could choose to cover firms with more efficient prices. To address the potential endogeneity problem, I use two-stage least squares (2SLS) tests, adopting an instrumental variable (IV) that is arguably exogenous to stock price movement to capture the variations in media coverage. Following Drake et al. (2014) and Ahn et al. (2019), I use the lagged media coverage during the nonreport period (*COV_NONREP_LAG*) as the instrument. The underlying rationale is that media coverage from the prior year is likely to be significantly associated with the current year

media coverage, given the persistent nature of media coverage. Meanwhile, the prior year media coverage is unlikely to directly influence investors' reaction to earnings announcements or analysts' forecasts in the current year.

The results from the system of equations are presented in the Panel A of Table 2.6. All controls are included in both the first-stage and second-stage models. Only the coefficients of interest are presented. Columns (1) – (6) present the instrumental variable tests of the relation between pre-announcement media coverage (*COV_NONREP_NA*) and analyst forecast characteristics (H1).

The first stage predicts the pre-announcement media coverage for each firm-year as a function of lagged media coverage (*COV_NONREP_LAG*). The second stage estimates equation (2.1) with the variable of interest being the predicted value for pre-announcement media coverage from the first stage. Columns (1), (3) and (5) present the finding that the IV is significantly and positively related to nonreport period media coverage in the first stage regression, which strongly rejects the null hypothesis of weak instruments. In Columns (2), (4) and (6), the results are consistent with the main results reported earlier. Columns (7) and (8) reports the instrumental variable tests of the relation between pre-announcement media coverage (*COV_NONREP*) and revaluation index (H2). I find that the coefficient for the instrumented media coverage is significantly negative, consistent with the main findings.

2.6.2. Matched Sample Tests

As another approach to mitigate the endogeneity concern that media coverage is

not randomly assigned, I also repeat all the main analyses using an industry-year-size-disclosures matched sample. Although this approach does not resolve the endogeneity problem per se, to the extent that there is an endogenous determinant of media coverage, matching methods could mitigate some of the omitted variable concerns (Roberts and Whited 2013). Specifically, for each firm in my sample, I find a matched firm in the same industry, in the same year, in the same size decile, and in the same decile of firm-initiated disclosures (as measured by the number of 8-K filings during the fiscal period), but with the largest difference in pre-announcement media coverage. Untabulated t-tests show insignificant differences in firm size (*SIZE*) and the level of 8-K disclosures between matched pairs. This procedure produces a sample of 7,840 firm-year observations. I then rerun all my analyses using this matched subsample and report the results in Panel B of Table 2.6. All the main inferences remain unchanged.

2.6.3. Changed Sample Tests

To further enhance the link between media coverage and investors' reactions, I identify 7,020 firm-year observations from year t to year t+1 during my sample period and perform a within-sample analysis. [14] Empirically, observations in year t serve as the control group, while observations in year t+1 serve as the treatment group. I rank the changes in nonreport period from year t to t+1 into terciles

[14] Examining the differences of firm characteristics between the treatment group and control group reveals that the several characteristics such as firm size, 8-K disclosures and analyst following are significantly different. Therefore, it is likely that the changes in media coverage is not exogenous. In additional to other robustness check, this analysis serves as a complementary test to mitigate some of omitted variable concerns.

(*RANK_INCREASE_NONREP*) and consider this the treatment level each firm received in year t+1. I then test whether the dependent variables in my main tests are associated with the treatment (i.e., increases in media coverage from year t to t+1). The regression results are presented in Panel C of Table 2.6. The results are consistent with the main findings.

2.6.4. Sample without Firm-initiated Disclosures

To further eliminate the effect of firm-initiated disclosures, I construct a subsample without any firm-initiated disclosures (i.e., SEC 8-K fillings and management guidance) from 61 trading days before to one day after earnings announcements (i.e., [-61, +1] relative to earnings announcement date). This subsample contains 3,338 firm-year observations. I repeat all my main regressions and report the results in Panel D of Table 2.6. I find that the pre-announcement media coverage is positively associated with analyst forecast accuracy and forecast frequency, and negatively associated with the revolution index. However, I do not find a significant relation between pre-announcement media coverage and analyst responsiveness to earnings announcements, possibly due to the small sample size.

Table 2.6 Robustness checks
Panel A: Instrumental Variable Tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First-stage	Second-stage	First-stage	Second-stage	First-stage	Second-stage	First-stage	Second-stage
VARIABLES	*COV_NONREP_NA*	*ACCURACY*	*COV_NONREP_NA*	*FREQ*	*COV_NONREP_NA*	*RESP*	*COV_NONREP*	*RI*
COV_NONREP_LAG	0.557***		0.531***		0.374***		0.362***	
	(0.000)		(0.000)		(0.000)		(0.000)	
COV_NONREP_NA		0.005***		0.422***		-0.194**		
		(0.000)		(0.000)		(0.015)		
COV_NONREP								-0.199***
								(0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.284***	-0.064***	0.150**	-9.810***	-0.045	-7.033***	-0.212***	1.819***
	(0.000)	(0.000)	(0.010)	(0.000)	(0.499)	(0.000)	(0.000)	(0.000)
Observations	17,947	17,947	22,449	22,449	22,449	22,449	22,449	22,449
R-squared	0.515	0.180	0.515	0.499	0.576	0.577	0.599	0.106

Table 2.6 (Continued)
Panel B: Matched Sample

VARIABLES	(1) *ACCURACY*	(2) *FREQ*	(3) *RESP*	(4) *RI*
COV_NONREP_NA	0.004***	0.568***	-0.090*	
	(0.003)	(0.000)	(0.083)	
COV_NONREP				-0.162***
				(0.000)
FREQ				-0.227***
				(0.000)
RESP				0.054***
				(0.000)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-0.037**	-8.475***	-9.503***	0.241
	(0.015)	(0.000)	(0.000)	(0.299)
Observations	6,176	7,840	7,840	7,840
R-squared	0.175	0.507	0.568	0.130

Table 2.6 (Continued)
Panel C: Changed Sample

VARIABLES	(1) *ACCURACY*	(2) *FREQ*	(3) *RESP*	(4) *RI*
RANK_INCREASE_NONREP	0.003**	0.703***	-0.244***	-0.112***
	(0.043)	(0.000)	(0.000)	(0.000)
FREQ				-0.031***
				(0.000)
RESP				0.057***
				(0.000)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-0.041**	-8.391***	-10.075***	0.038
	(0.025)	(0.000)	(0.000)	(0.898)
Observations	5,621	7,020	7,020	7,020
R-squared	0.183	0.445	0.564	0.122

Table 2.6 (Continued)
Panel D: Subsample without firm disclosures

VARIABLES	(1) *ACCURACY*	(2) *FREQ*	(3) *RESP*	(4) *RI*
COV_NONREP_NA	0.006***	0.381***	0.228	
	(0.000)	(0.003)	(0.120)	
COV_NONREP				-0.117***
				(0.006)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-0.028*	-3.563***	-4.615***	0.610*
	(0.074)	(0.000)	(0.000)	(0.056)
Observations	2,092	3,338	3,338	3,338
R-squared	0.175	0.477	0.515	0.119

In sum, by using instrumental variable tests, matched and changed sample analyses, and a small sample without firm-initiated disclosures, I provide robust evidence that media coverage improves analysts' and investors' earnings expectations and facilitates the diffusion of earnings-related information prior to earnings announcements. [15, 16]

[15] My main prediction is that pre-announcement media coverage helps investors anticipate information prior to earnings announcements and preempts the information content of earnings announcements. If the business press tends to cover newsworthy disclosures, or certain firm characteristics elicit press coverage, then media coverage would be positively associated with the magnitude of new information in earnings announcements. This type of endogeneity would bias against my results, thus, it is less of a concern in this study.

[16] Drake et al. (2014) point out that firms covered by the business press could be fundamentally different from those not covered by the business press. To further ensure that this type of selection bias does not significantly affect my results of this study, I remove the 1,537 firm-year observations with no media coverage during the fiscal year and rerun my main analyses using a more homogeneous sample.

2.7. Additional Analyses

2.7.1. Types of News Events

I next explore the types of news events that help analysts and investors to form their earnings expectations. Almost a quarter (24.07%) of the articles in my sample are about earnings, including earnings announcements and management earnings guidance (see Appendix B). The remaining articles include stories on underlying economic activities such as product releases and labor conditions that investors could arguably use to improve their earnings expectations. However, given investors' information-processing constraints, it is possible that investors only pay attention to news emphasizing earnings numbers. As a result, the effects of pre-announcement media coverage could be mainly driven by the dissemination of earnings news releases.

Using RavenPack's news event categories, I test the relation between media coverage and market earnings expectations (*ACCURACY* and RI). Specifically, I measure the volume of news articles related to "Earnings" (*COV_NONREP_EARN*) and the volume of news articles that are not directly related to "Earnings" (*COV_NONREP_NONEARN*) during the non-report period (i.e., 60 trading days ending two days prior to earnings announcements). I further separate news events that are not directly related to earnings into five groups: insider trading, revenue, product services, labor issues, and all other types of news events such as legal issues, acquisitions, etc. To test analysts' anticipation of earnings, I exclude news articles directly related to analyst

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Untabulated results show that all my main inferences hold.

forecasts, and append "*_NA*" to each of the media coverage by event types to indicate each of these measures after excluding news articles that are directly related to analyst forecast.

Estimation results are reported in Table 2.7. Column (1) shows that only non-earnings-related media coverage is significantly and positively associated with analyst forecast accuracy, while earnings-related media coverage has no significant effect on analyst forecast accuracy. In contrast, in column (3), both earnings-related media coverage and non-earnings-related media coverage are significantly and negatively associated with the revaluation index. Moreover, these two coefficients are not significantly different from each other (F-statistic = 1.35, p-value = 0.25). The results in columns (2) and (4) provide further evidence that analysts and investors gain different type of information from media coverage. Overall, the results in Table 2.7 support my conjecture that news reports that are not directly related to earnings numbers (e.g., product services, labor issues, etc.) during the nonreport period also improve investors' expectations of upcoming earnings news in earnings announcements.

2.7.2. Information Generation or Information Dissemination

In my main analyses, I expect media coverage to reduce investors' information acquisition and processing costs, thereby increasing the amount of information that analysts and investors can assimilate prior to earnings announcements. This effect of media coverage could be attributable to the role of information generation and/or the role of information dissemination of the media.

Table 2.7 Types of News Events

VARIABLES	(1) *ACCURACY*	(2) *ACCURACY*	(3) *RI*	(4) *RI*
COV_NONREP_EARN (_NA)	0.000	-0.001	-0.117***	-0.081***
	(0.695)	(0.328)	(0.000)	(0.000)
COV_NONREP_NONEARN (_NA)	0.003***		-0.145***	
	(0.000)		(0.000)	
COV_NONREP_INSIDER (_NA)		0.002**		-0.023
		(0.012)		(0.115)
COV_NONREP_REV (_NA)		0.005***		-0.119***
		(0.006)		(0.000)
COV_NONREP_PROD (_NA)		-0.002*		-0.062***
		(0.095)		(0.003)
COV_NONREP_LABOR (_NA)		0.000		0.023
		(0.734)		(0.239)
COV_NONREP_OTHER (_NA)		0.002***		-0.194***
		(0.007)		(0.000)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Constant	-0.038***	-0.038***	0.306**	0.202
	(0.000)	(0.000)	(0.044)	(0.181)
Observations	21,249	21,249	26,984	26,984
R-squared	0.168	0.168	0.114	0.117

To provide insight on the mechanism through which the business press diffuses information, I examine whether the relation between analysts' and investors' responses to earnings related information and pre-announcement media coverage varies with the formats of news articles. Specifically, I decompose the total media coverage into full articles and other newswire articles (i.e., news flashes, tabular material and press releases distributed by Dow Jones).[17] News flashes typically just rebroadcast company-

[17] RavenPack classifies news story into five categories: hot news flash, news flash, full article, press release and tabular material. Hot news flash or news flash contain a headline and no body text. Press

initiated disclosures, while full articles usually include additional editorial content. See Appendix C for examples of different types of news stories. Following Drake et al. (2014) and Bonsall et al. (2018b), I use the log transformed number of news flashes (*COV_NONREP_WIRE*) as a proxy for the level of information dissemination and the log transformed number of full articles (*COV_NONREP_FULL*) as a proxy for the level of information generation. I further exclude news articles that are directly related to financial analyst forecasts, and append "_NA" to each of the media coverage by news format to indicate non-analyst-related media coverage, for testing analyst forecast accuracy. Not surprisingly, the level of information generation is significantly and positively correlated with the level of information dissemination (correlation coefficient is 0.420, p-value < 0.01), suggesting that the media tends to report news events in various formats.

In Table 2.8, columns (1) – (3) reports the estimation results for analyst forecast accuracy, columns (4) – (6) reports the estimation results for the revaluation index. I find that the level of information generation (*COV_NONREP_NA_FULL* and *COV_NONREP_FULL*) and the level of information dissemination (*COV_NONREP_NA_WIRE* and *COV_NONREP_WIRE*) both improve market participants' anticipation and processing of earnings-related information prior to

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release and tabular material are firm disclosures distributed via Dow Jones Newswire. Full articles include mostly textual material with additional editorial content. In my sample, 37.68% of news reports are full-text articles, and 39.96% of news reports are news flashes. Drake et al. (2014) use news flashes only to proxy for the level of information dissemination. My inference that the effect of information dissemination is stronger than the effect of information generation does not change, if I only use news flashes measure the level of information dissemination.

earnings announcements, respectively.

Table 2.8 Information Dissemination and Information Generation

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	ACCURACY			*RI*		
COV_NONREP_NA_FULL (β_1)	0.002***		0.001**			
	(0.004)		(0.032)			
COV_NONREP_NA_FLASH (β_2)		0.002**	0.002*			
		(0.015)	(0.083)			
COV_NONREP_FULL (β_1)				-0.067***		-0.035**
				(0.000)		(0.025)
COV_NONREP_FLASH (β_2)					-0.224***	-0.216***
					(0.000)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic ($\beta_1 = \beta_2$)			0.20			52.16
Observations	21,249	21,241	21,241	26,984	26,984	26,984
R-squared	0.167	0.167	0.167	0.111	0.115	0.115

In column (3), the effect of information dissemination is not significantly different from that of information generation (difference p-value < 0.01), while in column (6), the effect of information dissemination is stronger than that of information generation (difference p-value < 0.01). This suggests that the effect of information dissemination dominates the effect of information generation on preempting the information content of earnings announcements. However, the two roles of media coverage seem to have similar effect on improving analysts forecast accuracy. Because of the highly significant correlation between information dissemination and information generation, I do not make strong inferences when they are both included in the

regressions.

2.7.3. Sources of Information

This section provides some insight on the relative importance of media coverage versus other information sources that investors have access to. Following Beyer et al (2010), I examine the contribution of media coverage, analyst forecasts, management guidance, firm SEC filings, and earnings announcement to the information reflected in stock prices. Specifically, I estimate a simple decomposition of total stock return using the following regression:

$$CAR\_TOTAL = \alpha + \beta_1 CAR\_MEDIA + \beta_2 CAR\_ANALYST + \beta_3 CAR\_MANAGER + \beta_4 CAR\_FIRM + \beta_5 CAR\_EA + \varepsilon, \quad (5)$$

where *CAR_TOTAL* is the cumulative size adjusted abnormal return from 61 trading days before to one day after earnings announcements (i.e., [-61, +1] relative to earnings announcement date). For each type of event (e.g., media report or analyst forecast), *CAR_EVENT* is the sum over all events of that type in the nonreport period of the 3-day cumulative size adjusted abnormal return centered on each event. *CAR_EVENT* is 0 for a given event type if there are no events of that type. If an analyst forecast, management guidance or a firm-initiated 8-K disclosure is issued concurrently with a media news report, *CAR_MEDIA* is coded as zero and only include the cumulative abnormal returns around the other disclosure events. This procedure results in a lower bound estimate of the contribution of media coverage to the stock price variance. *CAR_EA* is the 3-day cumulative size adjusted abnormal return centered on earnings announcements.

In Table 2.9, the results indicate that, for an average firm, 49.1% of the stock return variance for the estimation period is explained by pre-announcement events (i.e., media coverage, analyst forecasts, management guidance and firm-initiated SEC filings prior to earnings announcement) and the earnings announcement. Importantly, media coverage prior to earnings announcement accounts for 41.9% (partial R^2 = 20.6%; 20.6%/49.1% = 41.9%) of the total information provided by financial analysts, managers, firms and the media. This analysis suggests that while media reports, analyst forecasts, management guidance, and SEC 8-K disclosures are incorporated in investors' expectations of earnings, the biggest contributor is the media coverage.

2.7.4. Good News and Bad News

In my main analyses, I focus on the relation between media coverage and the magnitude of news contained in earnings announcements, without considering the sign of the news in earnings announcements. Kothari et al. (2009) document asymmetric stock market reactions to the public releases of bad versus good news and argue that managers tend to withhold bad news up to a certain threshold. This section examines whether pre-announcement media coverage mitigates the asymmetric market reactions to bad news disclosures in earnings announcements.

Table 2.9 Information Dissemination and Information Generation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	*CAR_TOTAL*	*CAR_TOTAL*	*CAR_TOTAL*	*CAR_TOTAL*	*CAR_TOTAL*	*CAR_TOTAL*	*Partial R^2*
Business press report (*CAR_MEDIA*)	0.158***					0.121***	0.206
	(0.000)					(0.000)	
Analyst forecast (*CAR_ANALYST*)		0.078***				0.041***	0.097
		(0.000)				(0.000)	
Management forecast (*CAR_MANAGER*)			0.896***			0.358***	0.022
			(0.000)			(0.000)	
Firm disclosure (*CAR_FIRM*)				0.033***		0.010***	0.009
				(0.000)		(0.000)	
Earnings announcement (*CAR_EA*)					0.965***	0.981***	0.157
					(0.000)	(0.000)	
Intercept	0.016***	0.006***	0.019***	0.008***	0.020***	0.003***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Observations	26,984	26,984	26,984	26,984	26,984	26,984	
R-squared	0.267	0.182	0.054	0.031	0.155	0.491	

Niessner and So (2018) find that media coverage is titled toward negative events. If the pre-announcement media coverage warns investors about bad news ahead of earnings announcements, then the asymmetric reactions to bad news will be smaller. Following Kothari et al.'s (2009) methodology, I examine the effect of pre-announcement media coverage on investors' asymmetric reactions to good versus bad news in earnings announcements. Specifically, I define bad news by an indicator variable (*BADNEWS*) that equals one if earnings surprise (*UE*) is negative, and zero otherwise. Table 2.10 presents the regression result of stock price behavior around earnings announcements.

Column (1) reports the baseline regression. The average price reaction to good news release is 0.97% and to bad news release is -1.87% (=-2.84%+0.97%), with the difference in the magnitude of these reactions being significant (F-statistic=81.31). Column (2) introduces an indicator variable that equals one if pre-announcement media coverage is in the top tercile (*HIGH_COV*). The coefficient on the interaction term (*BADNEWS*HIGH_COV*) is positive and significant, suggesting that the asymmetric market reactions to good versus bad news in earnings announcements are mitigated for high media coverage firms. Column (3) controls for the size of the earnings surprise (*UE*) and the coefficient on the interaction term remains positive and significant. In Column (4), I replace the dummy variable for high media coverage with the level of media coverage (*COV_NONREP*), the coefficient on *BADNEWS*COV_NONREP* remains positive and significant ($p<0.01$). Column (5) includes additional variables from equation (2.2) to control for pre-announcement information environment and

determinants of media coverage, year fixed effects, and industry fixed effects. My inference does not change. Overall, these results suggest that pre-announcement media coverage mitigates investors' asymmetric reactions to good news versus bad news in earnings announcements, possibly through broadcasting bad news prior to earnings announcements.

Table 2.10 Asymmetry Market Reactions to Good News versus Bad News

	(1)	(2)	(3)	(4)	(5)
VARIABLES	*CAR [-1,+1]*	*CAR [-1,+1]*	*CAR [-1,+1]*	*CAR [-1,+1]*	*CAR [-1,+1]*
BADNEWS	-0.028***	-0.032***	-0.039***	-0.039***	-0.039***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HIGH_COV		-0.001	-0.007***		
		(0.526)	(0.000)		
*BADNEWS*HIGH_COV*		0.009***	0.015***		
		(0.001)	(0.000)		
COV_NONREP				-0.001	-0.001*
				(0.100)	(0.060)
*BADNEWS*COV_NONREP*				0.003***	0.003***
				(0.005)	(0.003)
UE			0.003	0.056	0.045
			(0.963)	(0.124)	(0.215)
Controls	No	No	No	No	Yes
Year fixed effects	No	No	No	No	Yes
Industry fixed effects	No	No	No	No	Yes
Constant	0.010***	0.009***	0.017***	0.016***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	26,984	18,410	14,348	21,249	21,249
R-squared	0.022	0.020	0.034	0.035	0.043

3. THE ROLE OF THE MEDIA IN THE PRICING OF INDUSTRY-WIDE EARNINGS INFORMATION

3.1. Introduction to Section 3

An emerging stream of research has recently recognized the role of the media as an information intermediary in facilitating price discovery (e.g., Drake et al. 2014; Twedt 2016; Guest 2017). Questions about the role of the media in capital markets are relevant because the media is the broadest and most widely disseminated among all potential information intermediaries in the capital markets (Bushee e al. 2010). An individual firm's earnings and stock prices reflect both firm-specific and industry-wide economic fundamentals (Ball and Brown 1968; Hui et al. 2016). Media coverage could act as a conduit for intra-industry information transfers and affect investors' processing of industry-wide information. However, since extant studies on the role of media mainly focus on the effect of media coverage at the firm-level, we know little about the role of media coverage in the pricing of earnings-related information at the industry-level. This study attempts to fill this void in the literature by examining whether the media coverage enhances or detracts from the timely market response to industry-wide earnings information.

Prior studies suggest that the market is slow to incorporate aggregated industry-related information and that investors systematically underreact to industry-wide information (Hou 2007; Hui and Yeung 2013; Hui et al. 2016). This is possibly because the industry information is dispersed among different firms within the same industry,

and thus is more costly for investors to identify, aggregate and assimilate. Nevertheless, each firm's news potentially conveys information that is pertinent to the broader set of firms in its industry. Media coverage can facilitate intra-industry information transfer by directing investors' attention to a broader set of related firms and providing investors with aggregated industry-wide information. Therefore, media coverage could allow stock prices to incorporate industry information more promptly and mitigate investors' underreaction to industry-wide earnings information.

However, it is possible that media coverage has no or an adverse effect on the pricing of industry-wide earnings information. Media coverage at the firm level could drive more attention to firm-specific information and distract attention from the aggregated industry-wide information. Previous studies have documented the role of the press in improving the pricing of firm-specific information. For example, Drake et al. (2014) show that press coverage of earnings announcements mitigates the market mispricing of cash flow information. Ahn et al. (2019) find that press coverage of analyst recommendations decreases post-revision price drift. Both studies argue that the wide dissemination of firm-specific information better informs the market about the disclosed information. Given investors' limited attention and information processing capacity (Hirshleifer et al., 2009), media coverage may detract from the timely market response to industry-wide earnings information if media coverage drives investors' attention mainly towards firm-specific information. Furthermore, understanding the implications of firm-specific and industry-wide earnings information may require sophistication and financial expertise. Therefore, it is unclear, ex ante, what overall

effect the media has on the pricing of industry-wide earnings information.

To determine whether media coverage reduces investors' underreaction to industry-wide earnings information, I decompose annual earnings into industry-wide and firm-specific earnings information following Hui et al. (2016), and test the post-announcement drift associated with industry-wide earnings. I obtain media coverage from the RavenPack Dow Jones database during the period from 2010 to 2016. Because I expect that news coverage about firm's underlying economic activities, like product releases and labor conditions, could affect investors' understanding and interpretation of earnings-related information, I use business press coverage of a broad range of news events (not only earnings-related news) over the fiscal year period to measure media coverage. I find that media coverage during the year mitigates investors' underreaction to industry-wide earnings, suggesting that media coverage increases the diffusion of industry-wide information and improves investors' timely responses to industry-wide earnings information.

To provide further evidence on the role of the media in aggregating and disseminating industry information, I perform cross-sectional analyses to examine two situations in which media coverage has a more pronounced effect on the pricing of industry-wide information. First, I evaluate the level of information disseminated or produced by the media that is common to an industry. I argue that the media plays two roles: (1) identifying, extracting and widely disseminating common industry information and (2) attracting investors' attention to a broader range of related firms within an industry. Accordingly, I construct two measures for industry-wide news coverage. At the

firm level, I define a news article as industry-related news if there is at least one other news article of the same event type for a different company in the same industry on the same day. This measure captures the common industry news that the media identifies and disseminates. At the industry level, I calculate the concentration of news coverage for each industry-year using the Herfindahl index of media coverage. This measure captures the breadth of media coverage of related firms in the same industry. My cross-sectional analyses show that the mitigating effect of media coverage on the delayed pricing of industry-wide earnings is stronger for firms with high percentages of industry-level news reports, or for firms within an industry with wide-spread news coverage.

Second, I consider the conditions that are conducive to intra-industry information transfer. If media coverage improves the pricing of industry-wide information by facilitating intra-industry information transfer, then this effect should be stronger among firms in which performance comparison and information sharing with other firms is relatively easy. Using product similarity or earnings movement as conditions conducive to intra-industry information transfer, I find that the mitigating effect of media coverage on the delayed pricing of industry-wide earnings information is stronger when intra-industry information transfer is easier. Taken together, my cross-sectional analyses suggest that the media efficiently aggregates and disseminates value-relevant common information within the industry, and also facilitates intra-industry information transfers.

Lastly, I explore two alternative measures for the diffusion of industry-wide information into stock prices. First, I test the effect of industry-level news coverage on stock return synchronicity, which measures the relative amount of industry-wide and

firm-specific information being incorporated into stock prices (Roll 1988; Piotroski and Roulstone 2004). I find that industry-level news coverage is positively associated with price synchronicity, supporting my conjecture that industry-level media coverage improves intra-industry information transfer and increases the amount of common industry information in stock prices. Second, I examine whether the extent of intra-industry information transfer around earnings announcement varies with the announcing firms' media coverage prior to earnings announcements. When an earnings announcement contains industry-wide information, the stock prices of the announcing firm and its peer firms move in the same direction. If media coverage of the announcing firm increases the industry information diffusion and production prior to the earnings announcement, then the announcing firm's earnings announcement will contain less news pertinent to non-announcing firms. Consistent with this argument, I find that the strength of industry information transfer from earnings announcements is negatively associated with announcing firms' pre-announcement media coverage.

My study contributes to the literature on the role of the media as a financial information intermediary in the capital markets. Evolving research shows that the media plays an important role in capital markets by attracting attention, disseminating news and providing information (e.g., Tetlock 2014; Bushee et al. 2010; Rogers et al. 2016). The extant studies focus primarily on the effect of media coverage at the firm-level, such as on stock returns and trading volume. This study contributes to this literature by investigating the externalities of firm-specific media coverage and the role of the media in disseminating and aggregating common industry information. Furthermore, prior

literature has documented the role of financial analysts in improving intra-industry information transfers (Piotroski and Roulston 2004; Hilary and Shen 2013; Muslu et al. 2014). My analyses suggest that the media also serves as an important information intermediary in facilitating the pricing of industry-wide information. Lastly, I add to the literature on the role that financial intermediaries play in the pricing of accounting information. Drake et al. (2014) show that while press coverage of earnings announcements significantly reduces cash flow mispricing, it has a negligible effect on accrual mispricing. While their study is interested in earnings components determined by accounting systems (cash flow and accruals), my focus is on earnings components determined by economic fundamentals (industry-wide and firm-specific). My findings highlight the important role of the media in facilitating the pricing of accounting information that is influenced by underlying economic activities.

3.2. Literature Review, Motivation and Hypothesis Development

3.2.1. The Media as an Information Intermediary

While a long-standing literature examines the role of financial intermediaries such as equity financial analysts in capital markets (e.g., Givoly 1985, Lys and Sohn 1990, Bradshaw 2011), researchers have recently started to recognize the role of the media as an essential financial intermediary. The media has access to a broad range of information and disseminates news to a wide audience on a continual basis, therefore, it is important to understand the role of the media as an information intermediary in price discovery. The media can influence capital market outcomes by attracting attention,

disseminating news, and providing information (Tetlock 2014).

One stream of literature provides evidence on the relation between media coverage and general stock market consequences such as stock prices, trading volume, and liquidity. Using the number of newspaper articles about specific stocks to proxy for media exposure, Fang and Peress (2009) find significant association between media coverage and stock returns. Rogers et al. (2016) examine the market effects of media coverage of insider trading filings with the SEC. They find a substantial increase in trading volume within the two-minute window following media coverage of insider trading filings on the Dow Jones Newswire. Relatedly, Blankespoor et al. (2018) find that media synthesis and dissemination of earnings announcements increase both trading volume and liquidity. While all these studies focus on the dissemination role of media coverage of firm-specific news, Tetlock et al. (2008) investigate a different perspective of media coverage, the qualitative information in media coverage. They show that the negative words used in a broad set of firm-specific newspaper stories predicts future earnings and future returns.

Another stream of literature examines the role of media coverage in the price discovery role of accounting information. Drake et al. (2014) find that while press coverage of earnings announcements mitigates cash flow mispricing, it has a negligible effect on accruals mispricing. They attribute this effect to the media's dissemination function (news flash articles) rather than its role in information creation (full articles).[18]

[18] News flashes typically contains a headline only and just rebroadcast company-initiated disclosures, while full articles usually include body text and additional editorial content.

Twedt (2016) finds that press coverage of management earnings guidance is associated with larger initial price reactions and an increase in the speed with which guidance information is incorporated into price. Similarly, Ahn et al. (2019) document that broader press coverage of analyst forecast revisions is associated with a stronger initial market reaction to recommendation revisions as well as less post-revision drift. Using a series of restructuring events at the Wall Street Journal to capture the variations in earnings-related media coverage, Guest (2017) shows that Wall Street Journal articles covering earnings press releases increase price response coefficients for earnings surprises (ERCs) around earnings announcements.

It is notable that extant studies examining the capital market consequences of media coverage generally focus on the effect of media coverage at the firm-level. Peer firms play an important role in shaping the firm's information environment (Shroff et al. 2017). A firm's stock price is a function of the entire information set available to market participants, not just its information set (Schipper 1990). Studies on intra-industry information transfers document that one firm's disclosures affect the stock prices of peer firms. In contrast to prior studies on the role of media coverage, my study considers a broad range of business news and examines the effect of media coverage in the pricing of earnings-related information at the industry-level.

3.2.2. The Underreaction to the Industry-wide Earnings Information

Earnings are one of the most important summary measures of firm performance; they are influenced by both common industry-level fundamentals (e.g., consumer taste

and production technology) and firm-specific factors (e.g., competitive position).[19] Economic theory (e.g., Mueller 1977; Waring 1996) suggests that industry fundamentals (such as demand and supply, labor market, and regulatory environment) are more persistent than firm-specific fundamentals (such as management styles and business models).[20] This is because firm-level performance above or below the industry norm tends to be transitory because of mimicking or learning from competitive industry peers. Consistent with this view, Ahmed (1994) finds a negative relationship between the degree of competition and the change in firm value associated with earnings surprises, because the higher the competition in the firm's product markets, the lower the firm's ability to sustain future economic rents.

Consistent with economic theory, Hui et al. (2016) show that the industry-wide component of earnings is significantly more persistent than the firm-specific component. Moreover, they find that investors do not fully appreciate this difference and instead price securities as if the two components are equally persistent. Consequently, equity prices underweight the persistence of the industry-wide component of earnings and overweight the persistence of the firm-specific component. Additionally, Hui and Yeung (2013) show that post-forecast revision drift is mainly attributable to investors' underreaction to industry-wide earnings news and explain that this occurs because

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[19] Practitioners have emphasized the importance of understanding macroeconomic and industry-level information in forecasting earnings. For example, analysts frequently refer to macro- and industry-related issues in their research reports (Jackson et al. 2018). In this study, I follow Hui et al. (2016) and use industry-wide earnings to capture both the impact of market-wide forces on each industry and industry-specific earnings information.

[20] In this study, I follow Hui et al. (2016) and use industry-wide earnings to capture both the impact of market-wide forces on each industry and industry-specific earnings information.

investors do not fully appreciate the differential earnings persistence attributable to industry fundamentals. In a similar vein, Kovacs (2016) examines the role of intra-industry information transfers in post-earnings announcement drift and finds that investors' slow reaction to industry-wide information is a significant contributor to the analyst forecast-based post-earnings announcement drift.

Research in finance and accounting finds that slow information diffusion and limited investor attention contribute to the delayed pricing of industry information. For example, Hou (2007) finds that the slow diffusion of industry information is a major cause of the lead-lag effect of stock returns. Additionally, Hoberg and Phillips (2018) argue that industry peer firms identified through their product descriptions in 10-K filings are less visible than published traditional industry links such as SIC codes. [21] They show that investor inattention to less visible industry peers contributes to the slow adjustment of prices to peer earnings shocks and thus increases industry level post-earnings announcement drift, and conclude that slow propagation of information across less visible economic links plays a strong role in driving industry momentum. Intuitively, industry wide information is dispersed among different firms within the same industry and thus is more costly for investors to identify and assimilate than firm-specific information.

[21] Product-based textual network industry classification (TNIC), developed by Hoberg and Phillips (2016, 2010), is a new industry classification that defines industry peers as firms that use common vocabulary in the text of product description of their 10-Ks.

3.2.3. Media Coverage and the Pricing of Industry-wide Earnings

The literature on intra-industry information transfers finds that the stock prices of non-disclosing firms may increase or decrease following disclosures made by their peers, and concludes that a specific firm's disclosures contain industry-wide information. To date, academic researchers have provided ample evidence of intra-industry information transfers in various forms, such as earnings announcements, management earnings forecasts, and accounting restatements (Baginski 1987; Xu et al. 2006; Freeman and Tse 1992; Ayers and Freeman 1997). These studies suggest that news about related firms provides useful information to investors who are interested in assessing the value of the focal firm. I conjecture that value relevant information at the industry-level is dispersed across related firms in an industry, hence its pricing depends on how quickly this widely dispersed information is aggregated and processed by market participants and then becomes reflected in stock prices. Media coverage acts as a conduit for intra-industry information transfers, facilitating the timely pricing of industry-wide information.

I argue that the media coverage serves two roles in the diffusion of industry information. First, the business press often identifies and reports related news, or benchmarks firms' results to broader industry outcomes. This could help investors extract the common industry information from dispersed firms' news and better understand the information content of industry-wide versus firm-specific earnings components (see examples in Appendix D). Second, the business press improves intra-industry information transfers because news coverage of a broad set of firms in a

particular industry guides investors' attention to related peer firms and speeds up price reactions to related common news. As a result, media coverage could improve investors' timely responses to industry-wide earnings, and mitigate their under-reaction to industry-wide earnings information by providing industry news and facilitating intra-industry information transfers. Formally, I state my first hypothesis in an alternative form:

H1: Media coverage is positively associated with investors' timely responses to industry-wide earnings information.

3.2.4. Cross-Sectional Variation

The strength of information transfers among firms in the industry depends on many factors, including disclosing and non-disclosing firms' characteristics, related firms' information quality, and the activities of market participants. Kim et al. (2008) show that the type of information transfers from the same management forecast can be positive or negative based on the characteristics of the information receiver (e.g., rival or nonrival peer firms). Specifically, they find negative (positive) information transfers between forecasting firms and non-forecasting rival (nonrival) firms in the same industry. In addition, Ma (2017) provides evidence that related firms' information quality reduces a firm's market risk and shows that the effect is stronger for the firm with higher earnings correlation with related firms. Moreover, Piotroski and Roulstone (2004) suggest that market participants (e.g., analysts and institutional investors) facilitate the intra-industry information transfers through their relative information advantage and ability to disseminate common industry-level information.

While my first hypothesis focuses on the effect of overall media coverage, my second hypothesis considers situations in which the effect of media coverage on the diffusion of industry-wide information are likely to be stronger. Specifically, I focus on two cross-sectional partitions based on: (1) the level of industry news disseminated by the business press, and (2) conditions conducive to intra-industry information transfer.

First, the effect of media coverage on pricing of industry-wide earnings information could depend on the level of common industry news conveyed by media coverage. When the business press identifies and reports industry-wide news for related firms simultaneously or covers a broad range of related firms, investors may take less time or efforts to aggregate and disseminate industry-wide information. Therefore, I expect the effect of media coverage on the pricing of industry-wide earnings information to be more pronounced when industry-level news coverage is higher.

Second, I expect that the mitigating effect of annual media coverage on delayed reactions to industry-wide earnings should be stronger when intra-industry information transfer is easier and faster among firms. This conjecture follows my argument that the effect of media coverage on the pricing of industry-wide information is at least partially driven by intra-industry information transfers. When firms' operation is more similar or earnings correlation is high, performance comparison and information sharing with other firms would be relatively easy.

Based on the discussion above, I state my second set of hypotheses in alternative forms:

H2a: The effect of media coverage on investors' responses to industry-wide

earnings information is stronger when industry-level news coverage is higher.

H2b: The effect of media coverage on investors' responses to industry-wide earnings information is stronger when intra-industry information transfer is easier.

Notwithstanding the above discussion, whether and to what extent media coverage affects investors' timely responses to industry-wide earnings information is ultimately an empirical question. It is likely that when investors' attention is attracted to a specific firm or a set of information, their attention will be distracted from other firms or other sets of information. Much of the prior literature on the effect of media coverage has documented that broad dissemination of news by the press is associated with a strong market reaction to the disclosed firm-specific information (e.g., Bushee et al 2010; Blankspoor et al. 2018). If media coverage at the firm level drives investor attention to firm-specific information and away from broad industry-related information then media coverage could exacerbate investors' underreaction to industry-wide earnings because of investors' limited attention and information processing capacity (Hirshleifer et al., 2009; Hirshleifer et al., 2011). Furthermore, understanding the implications of firm-specific and industry-wide earnings information may require sophistication and expertise. It is possible that investors are not able to efficiently incorporate a broad type of news in various formats (qualitative and quantitative) in their valuation of industry-wide earnings, even with more accessible information provided by the media coverage.

3.3. Research Design

3.3.1. The Media as an Information Intermediary

To test my H1, I build on Hui et al. (2016) and use investors' underreaction to the industry-wide component of earnings to measure investors' timely responses to industry-wide earnings information. I estimate the following OLS regression of post-announcement abnormal returns:

$$SAR\,[+2,+61] = \beta_0 + \beta_1 D\_INDE_{it} + \beta_2 COV\_ANN_{it} + \beta_3 D\_INDE \times COV\_ANN_{it} + \beta_4 D\_UE_{it} + \beta_5 D\_UE_{it} \times COV\_ANN_{it} + \sum \beta_k\, Controls + \sum \gamma_k\, YearFE + \varepsilon, \quad (3.1)$$

where *SAR [+2, +61]* is the cumulative size-adjusted abnormal return over the sixty-day window beginning two days after the earnings announcement date. Industry-wide earnings (*INDE*) are calculated as the average earnings across sample firms in the same six-digit GICS industry in a year, representing the common component of the earnings of firms in the industry. Hui et al. (2016) document a systematic underreaction to total earnings, that is, $\beta_1 > 0$. In this regression, my variable of interest is annual media coverage (*COV_ANN*). I use media coverage during a fiscal year to match with the pricing of annual earnings. I rank the industry-wide earnings into deciles by year and then obtain the independent variable (*D_INDE*) by standardizing this measure to range from 0 to 1. If media coverage prompts timely price reactions to industry-wide earnings information, then I expect the association between *SAR [+2, +61]* and *D_INDE* to decline as media coverage increases, that is, $\beta_3 < 0$.

For control variables, I include the decile of earnings surprises (*D_UE*) to control for investors' underreaction to earnings surprises. Other controls include commonly used

variables that can affect the earnings-returns relation and/or media coverage: the decile rank of accruals (*D_ACCR*), firm size (*SIZE*), loss (*LOSS*), the book-to-market ratio (*BM*), the earnings-to-price ratio (*EP*), stock returns over the previous six months (*MOM*), market risk (*BETA*), analyst coverage (*LN_ANALYSTS*), institutional ownership (*INSTOWN*), reporting timeliness (*LAG*), and media coverage over a three-day window around the earnings announcement day (*COV_EA*), Additionally, to further control for the determinants of media coverage, I include the amount of firm-initiated material event disclosures (*8KS_ANN*), the number of employees (*EMP*), an indicator for outstanding credit ratings (*RATED*), and membership in the S&P 500 (*SP500*). Finally, I include year fixed effects to control for time trends and use firm-clustered standard errors to account for possible correlation across residuals within the same firm.

3.3.2. Cross-sectional Variations

The first set of cross-sectional analyses explores the variations in the level of industry news coverage (H2a). I construct two measures for industry-wide news coverage to capture the intensity of industry news reports and the breadth of media coverage. At the firm level, I define a news article as industry-related news if there is at least one other news article of the same event type for a different company in the same six-digit GICS industry on the same day. I then calculate the percentage of industry news articles of all news reports (*PERC_INDNEWS*) for each firm-year observation.[22] This

[22] Appendix D provides some examples of news articles classified as industry news using this definition. For example, in example D-1, three companies in the same industry are mentioned in the same article,

measure is designed to capture the extend of common industry component of each firms' news event that the media identifies and disseminates. At the industry level, I calculate the concentration of news coverage (*SPREAD_COV*) for each industry-year using the Herfindahl index of media coverage. This measure is designed to capture the breath of media coverage within an industry that arguably affects intra-industry information transfers. The intuition underlying these two measures is that industry-related news such as regulation changes is more likely to be reflected in the news reports of a group of firms in the industry, while a firm-specific event such as CEO retirement should only be covered in the news articles for this particular firm.

Then I partition my sample based on the level of industry-news coverage. If news coverage improves investors' understanding of industry-wide earnings information by aggregating and disseminating industry-wide information, then I expect the mitigating effects of media coverage on delayed pricing of industry-wide news to be more pronounced when industry-wide news coverage is higher (i.e., higher *PERC_INDNEWS* and higher *SPREAD_COV*).

The second set of cross-sectional analyses explore the variations in the conditions conducive to intra-industry information transfer (H2b). First, I use product similarity as one condition that eases information transfer within industries. Specifically, I employ the product similarity measure developed by Hoberg and Phillips (2016) and partition my

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therefore, this article is categorized as industry-level news. In example D-2, two different companies in the same industry are mentioned in two different articles of the same event type on the same day; therefore, these two articles are categorized as industry-level news.

sample into high and low similarity firms based on their total product similarity scores.[23] Second, I partition my sample into positive comovement and negative comovement firms. Freeman and Tse (1992) suggest that the magnitude of information transfer depends on the earnings comovement within the industry. Firms within the same industry could react differently to industry common forces (e.g., technology shocks). The intra-industry information transfer could be easier and faster when a firm's earnings move with industry common forces (i.e., positive comovement) than when a firm's earnings move against its industry common forces (i.e., negative comovement). To measure the direction of earnings comovement, I run a time-series regression of individual firm's earnings on the industry total earnings, estimated over the prior eight years with a minimum of three years required for inclusion. Then, I partition my sample based on the product similarity scores and the direction of earnings movement. I expect the mitigating effect of annual media coverage on delayed reactions to industry-wide earnings information to be stronger among firms with high product similarity or with positive earnings comovement.

3.4. Sample Selection and Descriptive Statistics

3.4.1. Sample Selection

[23] Hoberg and Phillips (2016) construct a firm-by-firm pairwise similarity score by comparing the product descriptions from firms' 10-K reports. For any two firms, the product similarity score in the interval [0, 1] describes similarities between words used for their product descriptions in their annual reports. Based on this textual analysis of product descriptions, the total product similarity measure (*TNIC3TSIMM*) is the sum of pairwise similarity between a firm and its industry peers to describe the total product similarity of a firm within its industry. A higher score of *TNIC3TSIMM* indicates that the text of the firms' business descriptions has more common vocabulary than a firm with a lower score.

I begin my sample selection with the universe of firms listed on the NYSE, AMEX and NASDAQ markets, with December 31 fiscal year ends[24] and with non-penny common stocks (i.e., stocks with price per share of at least $1.00 at the fiscal year end) from 2000 to 2016. I obtain financial data from COMPUSTAT, stock price data from CRSP, financial analyst data and management guidance data from I/B/E/S, and institutional ownership data from Thomson Reuters. I eliminate financial institutions (two-digit GICS code = 40); require each six-digit GICS industry in a year to have at least 4 firms in order to calculate industry-wide earnings; and require non-missing data for key variables. Following Hui et al. (2016), I use the Global Industry Classification Standard (GICS) as my industry classification scheme because it is consistent from year to year and provides a better grouping of firms for capital market-based research (Bhojraj et al. 2003). The final sample contains 26,984 firm-year observations. Table E-1 of Appendix E outlines the sample selection process.

I obtain news coverage data from the RavenPack Dow Jones Edition 4.0 dataset of real-time news coverage from 2000 to 2016. RavenPack provides data analytics for all news items disseminated using the Dow Jones Newswire service, which includes the Dow Jones Newswires, *the Wall Street Journal*, Barron's, and MarketWatch. RavenPack classifies a news article into news event categories (such as earnings, product releases, and business contracts, etc.) and also assigns a relevance score between 0 and 100 to

[24] Consistent with prior studies (Freeman and Tse 1992, Thomas and Zhang 2008, Han et al. 2019), I limit my sample to firms with December 31 fiscal year ends to ensure that the announcing firms and non-announcing firms have the same fiscal quarter-ends.

indicate how strongly the firm is related to the associated news story. Following Weller (2018), I exclude news events on trading or prices (i.e., technical analysis signals, stock price movements, order imbalance reports) and announcements of future disclosure dates (investor relations items). I merge the RavenPack database with COMPUSTAT/CRSP data using RavenPack's ISIN (or CUSIP) firm identifiers. Appendix B provides descriptions of news event types, including industry-wide and firm-specific news, in my media coverage sample. Industry-wide news stories constitute about 53% of the total news stories in the sample.

3.4.2. Descriptive Statistics

Panel A of Table 3.1 provides descriptive statistics on the main variables in my analyses. Log-transformed annual media coverage, *COV_ANN*, has a mean value of 4.03, meaning that the average number of news reports (*COUNT_ANN*) that firms in my sample have during a year is 86.04. Firms in the sample have 45.76 industry-related news articles (*COUNT_INDNEWS*) and 39.29 firm-specific news articles (*COUNT_FIRMNEWS*) during a year. The standard deviation of firm-specific earnings (*FIRME*) is much greater than the standard deviation of industry-wide earnings (*INDE*), consistent with firm-specific profitability being more volatile than industry-wide profitability (Hui et al., 2016).[25] Sample firms are covered by an average of 11 analysts.

[25] By construction, the mean of *FIRME* should be zero. The calculation of industry-wide earnings and firm-specific earnings is performed after step 4 of sample selection process (Table E-1 of Appendix E). For the sample of 33,524 observations, the mean of *INDE* is 0.034 and the mean of *FIRME* is 0.000.

Table 3.1 Summary Statistics
Panel A: Descriptive statistics

Variable	N	MEAN	STD	P10	P25	P50	P75	P90
COUNT_ANN	26,984	86.041	80.016	21	42	68	108	163
COV_ANN	26,984	4.032	1.208	3.091	3.761	4.234	4.691	5.1
COUNT_EA	26,984	7.423	5.749	2	4	6	9	14
COV_EA	26,984	1.893	0.76	1.099	1.609	1.946	2.303	2.708
COUNT_INDNEWS	26,984	45.755	44.591	5	19	36	60	93
COV_INDNEWS	26,984	3.355	1.221	1.792	2.996	3.611	4.111	4.543
COUNT_FIRMNEWS	26,984	39.285	50.697	5	14	26	47	82
COV_FIRMNEWS	26,984	3.145	1.201	1.792	2.708	3.296	3.871	4.419
PERC_INDNEWS	25,126	0.551	0.208	0.261	0.404	0.568	0.711	0.813
SPREAD_COV	26,984	-0.028	0.033	-0.058	-0.032	-0.017	-0.012	-0.008
CAR [+2, +61]	26,984	0.021	0.232	-0.205	-0.091	0.006	0.105	0.242
SYNCH	26,919	-0.771	1.257	-2.374	-1.536	-0.713	0.075	0.794
INDE	26,984	0.032	0.099	-0.078	0.015	0.058	0.091	0.11
FIRME	26,984	0.012	0.131	-0.101	-0.031	0.011	0.068	0.151
INDCF	26,984	0.0584	0.0828	-0.0273	0.0499	0.0786	0.1046	0.1254
INDACC	26,984	-0.0260	0.0393	-0.0784	-0.0502	-0.0191	-0.0009	0.0175
FIRMCF	26,984	0.0091	0.1165	-0.0968	-0.0344	0.0087	0.0621	0.1373
FIRMACC	26,984	0.0032	0.0681	-0.0725	-0.0276	0.0048	0.0381	0.0779
UE	26,984	-0.002	0.019	-0.002	0	0	0	0.001
ACC	26,984	-0.022	0.08	-0.112	-0.056	-0.015	0.018	0.058
SIZE	26,984	6.979	1.714	4.8	5.77	6.905	8.082	9.277
BETA	26,984	1.121	0.547	0.457	0.744	1.070	1.440	1.849
BM	26,984	0.494	0.386	0.119	0.242	0.42	0.649	0.944
EP	26,984	-0.004	0.162	-0.126	-0.008	0.035	0.059	0.086
MOM	26,984	0.012	0.188	-0.191	-0.089	0	0.094	0.219
LOSS	26984	0.273	0.446	0	0	0	1	1
ROA	26984	0.001	0.164	-0.167	-0.007	0.035	0.075	0.126
STD_EARN	26984	0.058	0.097	0.004	0.012	0.027	0.063	0.136
ANALYSTS	26,984	11.137	8.913	2	5	9	15	23
LN_ANALYSTS	26,984	2.232	0.749	1.099	1.792	2.303	2.773	3.178
INSTOWN	26,984	0.588	0.308	0	0.373	0.666	0.838	0.944
LAG	26,984	45.617	15.164	26	33	45	56	67
8KS_ANN	26,984	11.487	7.624	2	7	11	15	21
EMP	26,984	11.141	35.433	0.116	0.423	1.876	7.7985	25
SP500	26,984	0.171	0.376	0	0	0	0	1
RATED	26,984	0.302	0.459	0	0	0	1	1

Table 3.1 (Continued)
Panel B: Pairwise Correlations (asterisks indicate significant at 1% level)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	*COV_ANN*	1									
(2)	*PERC_INDNEWS*	-0.0169*	1								
(3)	*SPREAD_COV*	-0.0536*	0.5480*	1							
(4)	*CAR [+2, +61]*	-0.0059	-0.0475*	-0.0068	1						
(5)	*SYNCH*	0.2339*	-0.1005*	-0.1023*	-0.0123	1					
(6)	*INDE*	0.0502*	-0.2924*	-0.2205*	0.0726*	0.1472*	1				
(7)	*FIRME*	0.1141*	0.0191*	0.0027	0.0165*	0.1306*	-0.0088	1			
(8)	*SIZE*	0.4044*	-0.1488*	-0.1478*	-0.0414*	0.5235*	0.1274*	0.3224*			
(9)	*BM*	-0.1297*	-0.0870*	0.0035	0.1072*	-0.0210*	0.1405*	-0.1412*	-0.2983*	1	
(10)	*EP*	0.0795*	-0.0736*	-0.0678*	-0.0727*	0.1195*	0.2946*	0.4128*	0.2830*	-0.1625*	1
(11)	*MOM*	0.002	-0.0188*	0.0043	-0.0631*	-0.0129	0.0144	-0.0119	0.0176*	-0.0402*	0.0092
(12)	*LN_ANALYSTS*	0.3581*	-0.0219*	-0.0596*	-0.0134	0.3747*	0.0191*	0.2019*	0.7127*	-0.1855*	0.0873*
(13)	*INSTOWN*	0.3098*	0.0573*	0.0033	0.0064	0.2392*	0.0797*	0.1659*	0.2941*	-0.0883*	0.1289*
(14)	*LAG*	-0.1616*	0.0756*	0.0748*	0.0235*	-0.2725*	-0.0782*	-0.2335*	-0.4436*	0.1090*	-0.1312*
(15)	*COV_EA*	0.7435*	-0.1107*	-0.0833*	0.0071	0.2163*	0.0921*	0.1382*	0.3837*	-0.0975*	0.0901*
(16)	*8KS_ANN*	0.2329*	-0.0153	0.0190*	0.0006	0.1208*	0.0180*	-0.0448*	0.2235*	-0.0400*	0.0036
(17)	*EMP*	0.1980*	-0.1932*	-0.1859*	0.0028	0.2114*	0.1242*	0.0543*	0.3841*	-0.0465*	0.0791*
(18)	*SP500*	0.2828*	-0.2225*	-0.1557*	0.0028	0.3399*	0.0894*	0.1478*	0.6487*	-0.1008*	0.1180*
(19)	*RATED*	0.1711*	-0.2649*	-0.1043*	0.0340*	0.2915*	0.2166*	0.0627*	0.4042*	0.0525*	0.1082*
(20)	*UE*	0.0465*	0.0012	-0.0074	-0.0325*	0.0253*	-0.0044	0.0939*	0.1122*	-0.1433*	0.2768*

		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(11)	*MOM*	1									
(12)	*LN_ANALYSTS*	-0.0032	1								
(13)	*INSTOWN*	-0.0071	0.3064*	1							
(14)	*LAG*	-0.0619*	-0.3925*	-0.1846*	1						
(15)	*COV_EA*	0.0077	0.3514*	0.3079*	-0.2091*						
(16)	*8KS_ANN*	-0.0067	0.1737*	0.1594*	0.1195*	0.1313*	1				
(17)	*EMP*	0.0132	0.2663*	0.0597*	-0.2112*	0.2230*	0.0611*	1			
(18)	*SP500*	0.0205*	0.4843*	0.1340*	-0.3391*	0.3336*	0.1088*	0.3773*	1		
(19)	*RATED*	0.0415*	0.2953*	0.1016*	-0.2337*	0.1961*	0.0905*	0.1885*	0.3705*	1	
(20)	*UE*	0.0358*	0.0696*	0.0649*	-0.0779*	0.0441*	0.0032	0.0199*	0.0326*	0.0175*	1

Panel B of Table 3.1 provides pairwise correlations among the main variables used in my analyses. As expected, media coverage is positively correlated with firm size (*SIZE*), analyst following (*LN_ANALYST*), and institutional ownership (*INSTOWN*). The correlation coefficient between post announcement abnormal returns (*CAR [+2, +61]*) and industry-wide earnings (*INDE)* is positive and significant. To reduce the possibility that my inferences are influenced by extreme observations, I winsorize all continuous variables (except for stock returns) at the 1st and 99th percentiles of their distributions. All variables are defined in Appendix A.

3.5. Main Empirical Results

3.5.1. Investors' Responses to Industry-wide Earnings Information

Table 3.2 presents the results for the relation between media coverage and investors' responses to industry-wide earnings. I decompose total earnings into industry-wide earnings and firm-specific earnings. I rank the industry-wide and firm-specific earnings into deciles by year and then standardize to get the independent variable (*D_INDE* and *D_FIRME*), which is indexed from 0 to 1. Column (1) shows that the coefficient on the decile of industry-wide earnings (*D_INDE*) is positive and significant ($\beta = 0.054$, p-value < 0.01), while the coefficient on the decile of firm-specific earnings (*D_FIRME*) is insignificant. This suggests that the industry-wide earnings component predicts future positive stock returns, consistent with prior studies (Hui et al. 2016; Kovacs 2016).

Table 3.2 The Timeliness of Investors' Responses to Industry-wide Earnings Information (H1)

VARIABLES	(1) *CAR [+2, +61]*	(2) *CAR [+2, +61]*	(3) *CAR [+2, +61]*	(4) *CAR [+2, +61]*
D_INDE	0.054***	0.117***	0.115***	0.084***
	(0.000)	(0.000)	(0.000)	(0.006)
D_FIRME	0.002			
	(0.679)			
COV_ANN		0.007***	0.017***	0.019***
		(0.004)	(0.000)	(0.001)
*D_INDE * COV_ANN*		-0.016***	-0.016***	-0.016**
		(0.000)	(0.000)	(0.019)
D_UE			0.067***	0.077***
			(0.001)	(0.000)
*D_UE * COV_ANN*			-0.018***	-0.019***
			(0.000)	(0.000)
D_ACCR			-0.003	0.002
			(0.528)	(0.787)
SIZE			-0.008***	-0.066***
			(0.000)	(0.000)
LOSS			-0.021***	-0.021***
			(0.000)	(0.001)
BM			0.042***	0.049***
			(0.000)	(0.000)
EP			-0.141***	-0.176***
			(0.000)	(0.000)
MOM			-0.074***	-0.082***
			(0.000)	(0.000)
BETA			-0.023***	-0.030***
			(0.000)	(0.000)
LN_ANALYSTS			0.008***	0.003
			(0.008)	(0.587)
INSTWON			0.018***	-0.006
			(0.001)	(0.572)
LAG			0.000	0.000
			(0.253)	(0.693)
COV_EA			0.004	-0.001
			(0.143)	(0.726)
8KS_ANN			0.000	0.000
			(0.255)	(0.200)
EMP			0.000	0.000***
			(0.955)	(0.003)
SP500			0.009**	0.021**
			(0.037)	(0.010)
RATED			0.013***	-0.006
			(0.001)	(0.309)
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	No	No	No	Yes
Observations	26,984	26,984	26,984	26,984
R-squared	0.011	0.011	0.034	0.249

Following Zhang (2008), the coefficient on *D_INDE* can be readily interpreted as the size-adjusted abnormal return one can earn over the sixty trading days after earnings announcements with a zero-investment portfolio strategy that takes a long position in the highest decile and a short position in the lowest decile. The coefficient on *D_INDE* suggests that one can earn about 5.4% abnormal returns in the drift window with a zero-investment portfolio. In Column (2), I examine whether annual media coverage mitigates this underreaction to industry-wide earnings. The interaction term between *D_INDE*COV_ANN* is significantly negative, suggesting that media coverage has a significant mitigating effect on the magnitude of the drift. In Column (3), I report the estimation result of equation (3.1) with an array of control variables. The coefficient on the interaction term *D_INDE*COV_ANN* continues to be significantly negative, indicating the robustness of the effect of pre-announcement media coverage on the pricing of industry-wide earnings. In Column (4), I include firm fixed effects to eliminate the effect of time-invariant firm characteristics and find my results are robust. These results provide supporting evidence for my first hypothesis that the overall media coverage facilitates the pricing of industry-wide earnings information.

3.5.2. Cross-sectional Variation

In this section, I perform two set of cross-sectional analyses based on the situations in which the effect of media coverage on aggregating and disseminating industry-wide news can be different.

The first set of cross-sectional analyses focuses on the characteristics of media

coverage (H2a). To disaggregate the sample with respect to the level of industry-related news coverage, I do a median split based on the percentage of industry news reports (*PERC_INDNEWS*) and the breadth of media coverage within an industry (*SPREAD_COV*). Table 3.3 reports the regression results of equation (3.1) using the four subsamples. It shows that the effects of media coverage on delayed price reactions to industry-wide earnings are quite different across the two subsamples. The significant and negative relation between annual media coverage and delayed pricing of industry-wide earnings only exists for firms with high percentages of industry news reports (β = -0.023, p-value < 0.10). Similarly, the coefficient on the interaction term *D_INDE*COV_ANN* is only significant for firms in industries that are widely covered by the media (β = -0.023, p-value < 0.01). The differences in coefficients on the interaction terms are significant (p-value < 0.10 or better) across the subsamples. These results suggest the mitigating effects of media coverage on delayed pricing of industry-wide earnings information to be more pronounced when industry-level news coverage is higher, supporting my prediction in H2a.

Next, I perform cross-sectional analyses based on the conditions that are conducive to intra-industry information transfer (H2b). I expect the mitigating effects of annual media coverage on delayed reactions to industry-wide earnings to be stronger among firms in which performance comparison and information sharing with other firms is relatively easy. To test this conjecture, I partition my sample based on the level of Hoberg and Phillips (2016)'s product similarity scores and the signs of earnings comovement. Table 3.4 reports the results of subsample analyses. It shows that the

effects of media coverage on delayed price reactions to industry-wide earnings are quite different across the subsamples.

Panel A of Table 3.4 presents the results regarding the effect of product similarity on the relation between media coverage and the pricing of industry-wide earnings. Columns (1) and (2) report the baseline regressions. While the coefficient on *D_INDE*COV_ANN* is highly significant for firms with high product similarity, it is only marginally significant for firms with low product similarity. Column (3) to Column (6) examine whether the effect of industry-level news coverage is more pronounced when product similarity is high. In Columns (3) and (5), the joint effect of annual media coverage and industry-wide news coverage ($\beta_3 + \beta_7$) is significant at the 1% level, indicating that the negative association between media coverage and delayed pricing of industry-wide news is significantly stronger for firms with high industry-news coverage. Moreover, this joint effect is not significant when the product similarity is low.

Panel B of of Table 3.4 presents the results regarding the effect of earnings comovement on the relation between media coverage and pricing of industry-wide earnings. Similar to Panel A, I find that the mitigating effect of media coverage on investors' underreaction to industry-wide news is highly significant when the earnings comovement is positive. However, the coefficient on *D_INDE*COV_ANN* is insignificant when earnings comovement is negative. Columns (3) and (5) show that the joint effect of annual media coverage and industry-wide news coverage ($\beta_3 + \beta_7$) is only significantly negative when the earnings comovement is positive. Moreover, columns (4) and (6) show that this joint effect is no longer significant when the earnings comovement

is negative. Taken together, the results from this table suggest that the mitigating effect of annual media coverage on investors' underreaction to industry-wide earnings is stronger when intra-industry information transfer is relatively easy and fast, consistent with my prediction in H2b.

Table 3.3 Cross-sectional Variation - the Effect of Industry News Coverage (H2a)

	(1) Low % of Industry News	(2) High % of Industry News	(3) Concentrated Coverage	(4) Widespread Coverage
VARIABLES	*CAR [+2, +61]*	*CAR [+2, +61]*	*CAR [+2, +61]*	*CAR [+2, +61]*
D_INDE	0.035	0.138***	0.085***	0.144***
	(0.441)	(0.009)	(0.001)	(0.000)
COV_ANN	0.007	0.014	0.010	0.023***
	(0.543)	(0.231)	(0.105)	(0.000)
*D_INDE * COV_ANN*	0.002	-0.023*	-0.007	-0.023***
	(0.851)	(0.061)	(0.224)	(0.000)
D_UE	0.074	0.121**	0.050*	0.079***
	(0.154)	(0.033)	(0.073)	(0.002)
*D_UE * COV_ANN*	-0.018	-0.030**	-0.013**	-0.021***
	(0.117)	(0.024)	(0.044)	(0.001)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Constant	0.053	-0.105**	0.017	-0.112***
	(0.288)	(0.044)	(0.592)	(0.000)
Observations	12,660	12,466	13,124	13,860
R-squared	0.047	0.039	0.026	0.047
Test of difference in coefficients on *D_INDE * COV_ANN* [p-value, one-tail]		0.058		0.033

Table 3.4 Cross-sectional Variations - Conditions for Intra-industry Information Transfer (H2b)
Panel A: Subsamples Defined Based on Product Similarity

		High similarity	Low similarity	High similarity	Low similarity	High similarity	Low similarity
		(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES		*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*
COV_ANN	β_1	0.006	0.011**	-0.028***	-0.004	-0.007	0.011
		(0.131)	(0.034)	(0.007)	(0.725)	(0.207)	(0.137)
D_INDE	β_2	0.128***	0.105***	0.023	0.025	0.065*	0.106***
		(0.000)	(0.000)	(0.760)	(0.690)	(0.094)	(0.009)
*COV_ANN*D_INDE*	β_3	-0.022***	-0.011*	-0.003	0.006	-0.005	-0.011
		(0.001)	(0.099)	(0.865)	(0.662)	(0.572)	(0.237)
HIGH_INDNEWS	β_4			-0.144**	-0.006	-0.068**	0.005
				(0.019)	(0.930)	(0.028)	(0.910)
COV_ANN HIGH_INDNEWS*	β_5			0.030**	-0.003	0.020***	0.000
				(0.023)	(0.861)	(0.004)	(0.976)
*D_INDE*HIGH_INDNEWS*	β_6			0.250**	-0.034	0.098*	-0.002
				(0.018)	(0.733)	(0.079)	(0.970)
*COV_ANN*D_INDE*	β_7			-0.049**	0.012	-0.026**	0.001
**HIGH_INDNEWS*				(0.033)	(0.589)	(0.039)	(0.913)
Controls				Yes	Yes	Yes	Yes
Year fixed effect				Yes	Yes	Yes	Yes
Observations		12,570	12,578	11,646	11,681	12,570	12,578
R-squared		0.049	0.040	0.053	0.047	0.050	0.040
HIGH_INDNEWS = 1				if *PERC_INDNEWS* *is higher than sample medium*		if *SPREAD_COV* *is higher than sample medium*	
*COV_ANN*D_INDE + COV_ANN*D_INDE* **HIGH_INDNEWS*	$\beta_3 + \beta_7$						
F-statistic				9.60	0.98	10.98	0.90
P-value				0.002	0.322	0.001	0.343

Table 3.4 (Continued)
Panel B: Subsamples Defined by Direction of Earnings Comovement

		Positive comovement	Negative comovement	Positive comovement	Negative comovement	Positive comovement	Negative comovement
		(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES		*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*
COV_ANN	β_1	0.008**	0.009	-0.012	-0.015	-0.001	0.006
		(0.036)	(0.131)	(0.174)	(0.237)	(0.876)	(0.422)
D_INDE	β_2	0.132***	0.082**	0.053	-0.035	0.083**	0.085*
		(0.000)	(0.030)	(0.332)	(0.667)	(0.012)	(0.091)
*COV_ANN*D_INDE*	β_3	-0.018***	-0.013	-0.002	0.012	-0.007	-0.009
		(0.000)	(0.113)	(0.846)	(0.491)	(0.347)	(0.403)
HIGH_INDNEWS	β_4			-0.088*	-0.094	-0.061**	0.012
				(0.094)	(0.242)	(0.033)	(0.795)
COV_ANN HIGH_INDNEWS*	β_5			0.017	0.021	0.014**	0.004
				(0.151)	(0.241)	(0.025)	(0.672)
*D_INDE*HIGH_INDNEWS*	β_6			0.133*	0.081	0.087*	0.002
				(0.097)	(0.536)	(0.054)	(0.975)
*COV_ANN*D_INDE*	β_7			-0.026	-0.017	-0.018*	-0.008
HIGH_INDNEWS				(0.144)	(0.561)	(0.077)	(0.637)
Controls				Yes	Yes	Yes	Yes
Year fixed effect				Yes	Yes	Yes	Yes
Observations		20,095	6,889	18,754	6,372	20,095	6,889
R-squared		0.041	0.021	0.044	0.023	0.041	0.023
HIGH_INDNEWS = 1				if *PERC_INDNEWS* is higher than sample medium		if *SPREAD_COV* is higher than sample medium	
*COV_ANN*D_INDE* + *COV_ANN*D_INDE* *HIGH_ INDNEWS*	$\beta_3 + \beta_7$						
F-statistic				4.41	0.05	11.54	1.87
P-value				0.036	0.828	0.001	0.172

Overall, the cross-sectional analyses show that the effect of media coverage on the pricing of industry-wide earnings information varies predictably with the characteristics of media coverage and conditions for intra-industry information transfer. This evidence helps to strengthen my conclusion that the media facilitates the diffusion of industry-wide earnings information and improves intra-industry information transfers.

3.6. Additional Analyses

3.6.1. Price Synchronicity

This section explores an alternative measure of pricing of industry-wide information, stock return synchronicity, which captures the relative amount of firms-specific, industry-level, and market-level information impounded into stock prices. Piotroski and Roulstone (2004) find a positive association between analyst forecasting activity and stock return synchronicity, and argue that analysts increase the amount of industry-level information in stock prices. I predict that industry-level news coverage improves intra-industry information transfers, leading to more synchronous price movements among firms in the industry. I examine the relation between industry-level news coverage and return synchronicity using the following OLS regression:

$$SYNCH_{it} = \beta_0 + \beta_1 PERC\_INDNEWS_{it}(or\ SPREAD\_COV_{it}) + \sum \beta_k\, Controls + \sum \gamma_k\, YearFE + \sum \gamma_k\, IndustryFE + \varepsilon, \quad (3.2)$$

I follow Piotroski and Roulstone (2004) to construct price synchronicity by regressing weekly returns on the current and the prior week's value-weighted market return and the current and the prior week's value-weighted industry returns for each

firm-year observation (see detailed definition in Appendix A). Return synchronicity (*SYNCH*) is measured as the log transformation of R^2 estimated from the yearly regression. High values of *SYNCH* indicate stock returns incorporate more industry-wide information. Following prior literature (e.g., Piotroski and Roulstone 2004; Crawford et al. 2012; Ye et al. 2018), I include the following control variables that are associated with stock return synchronicity: firm size (*SIZE*), the book-to-market ratio (*BM*), profitability (*ROA* and *LOSS*), the earning to price ratio (*EP*), momentum (*MOM*), analyst coverage (*LN_ANALYSTS*), institutional ownership (*INSTOWN*), and earnings volatility (*STD_EARN*). Additionally, I include the amount of firm-initiated material event disclosures (*8KS_ANN*), the number of employees (*EMP*), an indicator for outstanding credit ratings (*RATED*), and membership in the S&P 500 (*SP500*) to further control for the determinants of media coverage. Finally, I include year and industry fixed effects, and use firm-clustered standard errors.

Table 3.5 presents the regression results. As the first step, I confirm the joint effect of the intensity of industry-level press coverage (*COV_INDNEWS*) and firm-specific press coverage (*COV_FIRMNEWS*) on return synchronicity in column (1). As expected, the coefficient on *COV_INDNEWS* is positive and significant, while the coefficient on *COV_FIRMNEWS* is negative and significant, suggesting that industry-level (firm-specific) media coverage helps investors to incorporate relatively more industry-wide (firm specific) information into stock prices.

Table 3.5 Price Synchronicity

VARIABLES	(1) *SYNCH*	(2) *SYNCH*	(3) *SYNCH*
COV_INDNEWS	0.036***		
	(0.002)		
COV_FIRMNEWS	-0.044***		
	(0.000)		
PERC_INDNEWS		0.274***	
		(0.000)	
SPREAD_COV			1.832**
			(0.018)
SIZE	0.385***	0.390***	0.382***
	(0.000)	(0.000)	(0.000)
BM	0.154***	0.164***	0.150***
	(0.000)	(0.000)	(0.000)
ROA	-0.229***	-0.211***	-0.230***
	(0.001)	(0.004)	(0.001)
LOSS	0.009	0.018	0.004
	(0.666)	(0.397)	(0.825)
EP	-0.089	-0.072	-0.085
	(0.109)	(0.218)	(0.127)
MOM	-0.191***	-0.165***	-0.194***
	(0.000)	(0.000)	(0.000)
LN_ANALYSTS	0.037**	0.029*	0.039**
	(0.028)	(0.097)	(0.022)
INSTOWN	0.243***	0.233***	0.245***
	(0.000)	(0.000)	(0.000)
STD_EARN	0.366***	0.370***	0.361***
	(0.000)	(0.000)	(0.000)
8KS_ANN	-0.006***	-0.006***	-0.006***
	(0.000)	(0.000)	(0.000)
EMP	0.001***	0.001***	0.001***
	(0.005)	(0.006)	(0.006)
SP500	-0.067**	-0.068**	-0.075**
	(0.047)	(0.046)	(0.024)
RATED	0.029	0.028	0.023
	(0.199)	(0.229)	(0.299)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Constant	-3.477***	-3.528***	-3.429***
	(0.000)	(0.000)	(0.000)
Observations	26,919	26,919	26,919
R-squared	0.455	0.455	0.455

Columns (2) and (3) report the results of estimating equation (3.2). In column (2), my variable of interest is *PERC_INDNEWS*, which measures the fraction of

industry-level news in total news coverage. The coefficient on *PERC_INDNEWS* is positive and significant (p-value < 0.01), suggesting that high percentage of industry-level press coverage facilitates the pricing of industry-wide information. In column (3), my variable of interest is wide-spread media coverage within an industry, *SPREAD_COV*. The negative and significant coefficient on *SPREAD_COV* (p-value < 0.01) suggests that firms in industries that are widely covered by the business press have more industry-wide information incorporated into their stock prices.

3.6.2. Media Coverage and Intra-industry Information Transfer

Prior research documents the intra-industry information transfers arising from earning announcements. The underlying premise is that one firm's earnings announcement conveys information that is useful for investors to assess peer firms' market value, leading to a revision in the stock prices of peer firms (e.g., Han and Wild 1990; Freeman and Tse 1992; Thomas and Zhang 2008). So far, I have shown that annual media coverage increases the amount of industry-wide information incorporated into stock prices, and annual media coverage mitigates the delayed pricing of industry-wide earnings information. To corroborate my main findings, I test whether announcing firms' annual press coverage affect peer firms' market reactions to announcing firm's earnings announcements. Firms' pre-announcement information production and dissemination is inversely related to the information content of earnings announcement (e.g., Atiase 1985; Beaver et al. 2018). Following a similar argument, if an announcing firms' media coverage facilitates the diffusion of industry-wide earnings related

information for all firms within the same industry prior to earnings announcements, then announcing firms' earnings announcements will contain less new information for its peer firms.

I examine whether intra-industry information transfers from earnings announcements is related to the announcing firms' pre-announcement media coverage using the following OLS regression:

$$PEERCAR[-1,+1]_{it} = \beta_0 + \beta_1 UE_{it} + \beta_1 COV\_ANN_{it} + \beta_1 UE_{it} \times COV\_ANN_{it} + \sum \beta_k Controls + \sum \gamma_k YearFE + \sum \gamma_k IndustryFE + \varepsilon. \quad (3.3)$$

The dependent variable is the non-announcing firms' average abnormal returns within the three-day window (*PEERCAR [-1, +1]*) around the announcers' earnings announcements. A positive coefficient (β_1) on announcing firms' earnings surprises (*UE*) indicates a positive information transfer from earnings announcements. My variable of interest is the interaction term between annual media coverage and earnings surprises. If annual media coverage increases the diffusion of industry-wide information prior to earnings announcements, then one firm's earnings announcement will convey less useful new information to its peers, that is, $\beta_3 < 0$. Control variables include firm size (*SIZE*), loss (*LOSS*), the book-to-market ratio (*BM*), the earning to price ratio (*EP*), momentum (*MOM*), market risk (*BETA*), leverage (*LEV*), analyst coverage (*LN_ANALYSTS*), institutional ownership (*INSTOWN*), reporting lag (*LAG*), media coverage around earnings announcement (*COV_EA*), the amount of firm-initiated material event disclosures (*8KS_ANN*), the number of employees (*EMP*), an indicator for outstanding credit ratings (*RATED*), and membership in the S&P 500 (*SP500*). Lastly, I include year

and industry fixed effects, and use firm-clustered standard errors.

Table 3.6 reports the analyses of intra-industry information transfers. First, I gather a different group of announcing firms by identifying the earnings announcements of the five largest firms by total assets in each firm-year. Then, I use stock returns from all same-industry non-announcing firms, regardless of whether the non-announcing firms has already announced earnings. The rationale underlying this test is that large firms are more likely to convey industry-wide news relevant to their industry peers (Asthana and Mishra 2001; Kovacs 2016). I require that the announcing and non-announcing firms' earnings announcement dates are not within 5 trading days from each other, in order to avoid confounding information transfers. In column (1), the significant and positive coefficient on *UE* verifies that my sample exhibits intra-industry information transfer around earnings announcements. In columns (2) – (4), the coefficient on *UE*COV_ANN* is negative and significant, suggesting that non-announcing industry peers gain less new industry information from announcing firms' earnings announcements. Column (2) reports the regression results of equation (3.3) and column (4) includes firm-fixed effects. This result is robust to controlling for a set of firm characteristics, year fixed effects, industry fixed effects, and firm fixed effects.

Taken together, the analyses in Section 6.1. and Section 6.2. provide additional supporting evidence that press coverage facilities the diffusion of industry-wide information, increases the relative amount of industry-wide information in stock prices, and improves intra-industry information transfers.

Table 3.6 Intra-industry Information Transfer

	(1)	(2)	(3)	(4)

VARIABLES	*PEERCAR [-1, +1]*	*PEERCAR [-1, +1]*	*PEERCAR [-1, +1]*	*PEERCAR [-1, +1]*
UE	0.096*	0.116***	0.115***	0.133***
	(0.060)	(0.007)	(0.001)	(0.000)
COV_ANN		-0.000	-0.000	-0.001
		(0.554)	(0.407)	(0.412)
*UE*COV_ANN*		-0.063***	-0.067***	-0.080***
		(0.000)	(0.000)	(0.000)
SIZE			-0.001*	-0.000
			(0.056)	(0.689)
LOSS			-0.002	-0.001
			(0.152)	(0.430)
BM			-0.001	-0.002
			(0.219)	(0.224)
EP			-0.000	0.001
			(0.910)	(0.725)
MOM			-0.002	-0.003
			(0.475)	(0.264)
BETA			-0.003***	-0.004***
			(0.001)	(0.000)
LN_ANALYSTS			-0.001	0.002
			(0.469)	(0.288)
INSTWON			0.000	-0.000
			(0.810)	(0.672)
LAG			0.001	0.001
			(0.212)	(0.310)
COV_EA			-0.000	0.000
			(0.490)	(0.904)
8KS_ANN			-0.000	-0.000
			(0.870)	(0.860)
EMP			0.000	0.001
			(0.957)	(0.711)
SP500			-0.000	0.001
			(0.975)	(0.494)
RATED			0.001	0.000
			(0.411)	(0.757)
Year fixed effect	No	Yes	Yes	Yes
Industry fixed effect	No	Yes	Yes	No
Firm fixed effect	No	No	No	Yes
Constant	0.000	0.014***	0.023***	0.012
	(0.535)	(0.000)	(0.000)	(0.165)
Observations	4,761	4,761	4,761	4,761
R-squared	0.004	0.062	0.067	0.163

3.6.3. Information Dissemination or Information Generation

In this section, I provide insights on the mechanism through which the business

press diffuses industry-wide earnings-related information by examining its information dissemination role and information generation role. Specifically, I decompose the total media coverage into full articles and other newswire articles (i.e., news flashes, tabular material and press releases distributed by Dow Jones). News flashes typically just rebroadcast company-initiated disclosures, while full articles usually include additional editorial content. Similar to Drake et al. (2014) and Bonsall et al. (2018b), I use the number of newswire reports as a proxy for the level of information dissemination and the number of full articles as a proxy for the level of information generation. Table 3.7 presents the estimation results for equation (1), after replacing total annual media coverage (*COV_ANN*) with full article coverage (*COV_ANN_FULL*) and newswire coverage (*COV_ANN_WIRE*). In columns (1) – (2), I find that the level of information generation (*COV_ANN_FULL*) and the level of information dissemination (*COV_ANN_WIRE*) both improve investors' timely responses to industry-wide earnings information. In column (3), the coefficient on information generation is no longer significant, while the coefficient on information dissemination remains significant and negative. It seems that the faster diffusion of industry-wide information arises mainly from benefits of wide dissemination of business news, rather than the supplemental information the business press provides to the market.[26]

Table 3.7 Information Dissemination or Information Generation

	(1)	(2)	(3)

[26] The correlation coefficient between *COV_ANN_FULL* and *COV_ANN_WIRE* are 0.664 and significant at 1% level. It seems that the media tends to report news events in various formats, so the level of full articles coverage is highly correlated with the level of newswire coverage. Because of the highly significant correlation between information dissemination and information generation, I do not make strong inferences when they are both included in the regressions.

	CAR [+2, +61]	*CAR [+2, +61]*	*CAR [+2, +61]*
D_INDE	0.007*		-0.009***
	(0.050)		(0.007)
COV_ANN_FULL	0.084***	0.142***	0.142***
	(0.000)	(0.000)	(0.000)
COV_WIRE		0.022***	0.029***
		(0.000)	(0.000)
*D_INDE * COV_ANN_FULL*(β_1)	-0.008**		0.008
	(0.034)		(0.116)
*D_INDE*COV_ANN_WIRE* (β_2)		-0.022***	-0.029***
		(0.000)	(0.000)
D_UE	0.034**	0.066***	0.065***
	(0.014)	(0.000)	(0.001)
*D_UE * COV_ANN_FULL*	-0.013***		
	(0.003)		
*D_UE*COV_ANN_WIRE*		-0.019***	-0.019***
		(0.000)	(0.000)
Controls	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
F-Statistic ($\beta_1 = \beta_2$)			11.90
Observations	26,984	26,984	26,984
R-squared	0.030	0.031	0.031

3.6.4. The Pricing of Industry-wide Accruals and Cash flows

This section examines whether annual media coverage affects the pricing of industry-wide accruals and cash flows. Sloan (1996) shows that the market fixates on total earnings, and overreacts to the operating accruals component of earnings while underreacting to the cash flow component. These inefficient price responses are arguably attributable to either the high cost of information acquisition or to investors' limited information processing capacity. Considering both industry fundamentals and accounting constructs together, Hui et al. (2016) further decompose the industry-wide and firm-specific earnings into industry-wide and firm-specific accruals and cash flows. They find that industry-wide cash flow is the most persistent component of earnings and

investors' underreaction to total cash flows is mainly attributable to its industry-wide component.

Prior literature has documented that financial intermediaries help investors better understand the implications of accrual and cash flow component of earnings. For example, Mohanram (2014) demonstrates that the mispricing of accruals is mitigated when financial analysts provide implicit forecasts of future accruals through cash flow forecasts. Related to my study, Drake et al. (2014) show that the business press coverage of annual earnings announcements alleviates the mispricing of cash flows but not the mispricing of accruals. To test the role of media coverage in the pricing of industry-wide earnings components, I follow Hui et al. (2016) and decompose industry-wide earnings (*INDE*) into industry-wide accruals (*INDACC*) and industry-wide cash flows (*INDCF*), then re-estimate equation (1).

Table 3.8 present the results. Column (1) of Panel A shows a baseline regression. The coefficient on the decile rank of industry-wide cash flows is larger than the coefficient on the decile rank of industry-wide accruals; this suggests that the industry-wide cash flows is a stronger predictor of future returns than firm-specific accruals. In columns (2) and (3), the coefficients on the interaction terms are both negative and significant, suggesting that annual media coverage has mitigating effects on the delayed pricing of industry-wide accruals and cash flows. While Drake et al. (2014) show that media coverage has negligible effect on the pricing of accruals, my analysis provides new evidence that the business press influences investors' price reactions to both accrual and cash flow component of industry-wide earnings.

Table 3.8 The Pricing of Industry-wide and Firm-specific Accruals and Cash Flows
Panel A: The Effect of Media Coverage on the Pricing of Industry-wide Accruals and Cash Flows

	(1)	(2)	(2)
VARIABLES	*SAR [+2, +61]*	*SAR [+2, +61]*	*SAR [+2, +61]*
COV_ANN		0.010***	0.022***
		(0.003)	(0.000)
D_INDACC	0.026***	0.063***	0.069***
	(0.000)	(0.000)	(0.000)
*D_INDACC * COV_ANN*		-0.009**	-0.009**
		(0.019)	(0.022)
D_INDCF	0.066***	0.114***	0.136***
	(0.000)	(0.000)	(0.000)
*D_INDCF * COV_ANN*		-0.012***	-0.016***
		(0.003)	(0.000)
D_UE			0.069***
			(0.000)
*D_UE * COV_ANN*			-0.017***
			(0.000)
Controls	No	No	Yes
Year fixed effect	Yes	Yes	Yes
Observations	26,984	26,984	26,984
R-squared	0.014	0.015	0.034

Table 3.8 (Continued)
Panel B: The effect of media coverage on the pricing of firm-specific accruals and cash flows

VARIABLES	(1) *SAR [+2, +61]*	(2) *SAR [+2, +61]*	(2) *SAR [+2, +61]*
COV_ANN		0.009**	0.020***
		(0.019)	(0.000)
D_FIRMACC	-0.009*	-0.002	0.037**
	(0.092)	(0.890)	(0.045)
*D_FIRMACC * COV_ANN*		-0.002	-0.004
		(0.701)	(0.331)
D_FIRMCF	0.009*	0.073***	0.122***
	(0.087)	(0.000)	(0.000)
*D_FIRMCF * COV_ANN*		-0.016***	-0.016***
		(0.000)	(0.000)
D_UE			0.059***
			(0.003)
*D_UE * COV_ANN*			-0.015***
			(0.001)
Controls	No	No	Yes
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	26,984	26,984	26,984
R-squared	0.021	0.021	0.043

To complete the analysis, in Panel B of Table 3.8, I test the effect of media coverage on the pricing of firm-specific accruals and cash flows. In Column (1), the negative and significant coefficient on the decile rank of firm-specific accruals provides evidence of investors' overreaction to firm-specific accrual component of earnings. In columns (2) and (3), we include interaction terms between annual media coverage and firm-specific accruals and cash flows. I find a significant effect of media coverage on the pricing of firm-specific cash flows, while there is no significant effect of media coverage

of the pricing of firm-specific accruals, consistent with the findings in Drake et al. (2014).

3.6.5. Robustness Checks

A potential concern with most of media studies is the endogenous determinant of media coverage, which could be affected by some correlated omitted variables. For example, the media could choose to cover firms with more efficient prices. Because industry-wide information, by construction, is independent of any specific firm information, such endogeneity is less a concern in my study. Furthermore, the cross-sectional analyses in Section 5.2. also provide consistent evidence on channels through which the media coverage facilitates intra-industry information transfers and alleviates potential concerns about omitted variables correlated with media coverage that might be driving the results. To check the robustness of main results, in this section, I perform three robustness checks to address the potential endogeneity problem.

First, I use two-stage least squares (2SLS) tests with the prior year media coverage as an instrumental variable (IV), following Drake et al. (2014) and Ahn et al. (2019). Panel A of Table 3.9 reports the results. Because I interact media coverage with the decile rank of industry-wide earnings, my estimation method follows the approach proposed by Wooldridge (2003) for nonlinear endogenous variables.[27] Column (1)

[27] The procedure for conducting 2SLS recommended by Wooldridge (2003) with interactions between endogenous and exogenous repressors involves one additional step. Specifically, I first regress the annual media coverage (*COV_ANN*) on my IV (*COV_ANN_LAG*) then predict media coverage *PRED_COV_ANN*. Second, I use *PRED_COV_ANN* and *D_EARN*PRED_COV_ANN* as the IVs in the 2SLS estimation. Bonsall et al. (2018a) also employ this method to deal with endogenous interaction terms

reports the initial regression of *COV_ANN* on my IV (*COV_ANN_LAG*). Columns (2) and (3) report the first stage analyses. The partial F-statistics for the joint significance of the instruments suggest that *PRED_COV_ANN* and *D_EARN*PRED_COV_ANN* are both strong instruments (p-value < 0.01). In column (4), I find that the coefficient for *D_INDE*COV_ANN* is significantly negative, consistent with my main findings presented in Table 3.2.

Next, I perform a matched sample test and change analysis, and report the results in Panel B of Table 3.9. To construct the matched sample, I find a matched firm for each firm in my sample in the same industry, year, size decile, and decile of firm-initiated disclosures (as measured by the number of 8-K filings during the fiscal period), but with the largest difference in annual media coverage. Untabulated t-tests show insignificant differences in firm size (*SIZE*) and the level of 8-K disclosures (*8KS_ANN*) but significant differences in annual media coverage (*COV_ANN*) between matched pairs. This procedure produces a sample of 7,840 firm-year observations. I then rerun equation (1) using this matched subsample and report the result in column (1). The coefficient on *D_INDE*COV_ANN* is negative and significant, consistent with main results.

Lastly, I identify 8,628 firm-year observations that experienced significant increases in media coverage from year t to year t+1 during my sample period and perform a within-sample analysis. Empirically, observations in year t serve as my control group while observations in year t+1 serve as my treatment group. I rank the

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in the regression.

changes in annual media coverage from year t to t+1 into quartiles (*RANK_INCREASE_ANN*), and consider this the treatment level each firm received in year t+1. I then test whether the dependent variables in my main tests are associated with the treatment (i.e., increases in media coverage from year t to t+1). The regression result is presented in column (2) of Panel B. The significant and negative coefficient on the interaction term suggests that increases in annual media coverage are positively associated with investors' timely responses to industry-wide earnings, consistent with my main findings earlier.[28]

Overall, using instrumental variable test, matched sample test and change analysis, I provide robust evidence that media coverage facilitates diffusion of industry-wide news and mitigates investors' underreaction to industry-wide earnings information.

[28] The matching and change approaches do not resolve the endogeneity problem per se, to the extent that there is an endogenous determinant of media coverage, however, these methods could mitigate some of the omitted variable concerns (Roberts and Whited 2013).

Table 3.9 Robustness Checks
Panel A: Instrumental Variable Tests

	(1) OLS	(2) First-stage	(3) First-stage	(4) Second-stage
VARIABLES	*COV_ANN*	*COV_ANN*	*D_INDE *COV_ANN*	*CAR [+2, +61]*
COV_ANN_LAG	0.287***			
	(0.000)			
PRED_COV_ANN		1.000***	0.056***	
		(0.000)	(0.000)	
*D_INDE*PRED_COV_ANN*		0.001	1.005***	
		(0.962)	(0.000)	
COV_ANN				0.015***
				(0.002)
*D_INDE*COV_ANN*				-0.028***
				(0.000)
D_INDE	-0.137***	-0.003	-0.010	0.175***
	(0.000)	(0.963)	(0.761)	(0.000)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Constant	1.297***	0.001	0.002	-0.079***
	(0.000)	(0.979)	(0.955)	(0.000)
Observations	26,984	26,984	26,984	26,984
R-squared	0.690	0.690	0.920	0.029

Table 3.9 (Continued)
Panel B: Matched Sample and Change Sample

	Matched sample	Change sample
	(1)	(2)
VARIABLES	*CAR [+2, +61]*	*CAR [+2, +61]*
D_INDE	0.153***	0.098***
	(0.000)	(0.000)
*D_INDE * COV_ANN*	-0.023***	
	(0.006)	
*D_INDE * RANK_INCREASE_ANN*		-0.013***
		(0.000)
Controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	No	No
Observations	7,840	8,628
R-squared	0.042	0.040

4. CONCLUSIONS

4.1. Conclusions for essay 1

This study examines whether media coverage preceding earnings announcements affects the information content of earnings announcements, through a direct information flow to investors and an indirect information flow through financial analysts. First, I find that pre-announcement media coverage improves analysts' anticipation of earnings and stimulates analyst forecast activities. Second, controlling for analyst forecast activities, I find that the announcement period price revaluation decreases as pre-announcement media coverage increases. This suggests that investors anticipating more of the earnings-related information prior to the earnings announcements. Lastly, I find that analyst forecast activity serves as an important channel through which the pre-announcement media coverage preempts the information content in earnings announcements.

This study contributes to the literature on the role of the media as an essential intermediary in capital markets. While it is well documented that financial analysts provide earnings forecast information to investors, this study provides initial evidence of the role the traditional business press plays in forming earnings expectations. This issue is especially relevant given the dramatic shrinkage in the equity research industry in the past decade. My study differs from prior literature in three important respects. First, I examine a critical but previously unexamined role of the media in price discovery—the preempting effect of media coverage on the amount of information contained in corporate disclosures. Second, I investigate the interaction between two information

intermediaries and their joint effect on the pricing of earnings-related information. Third, I study the continuous nature of media coverage over a long window, covering a broad range of economic events. Bushee et al. (2010) state that "The business press is perhaps the broadest and most widely disseminated of all potential information intermediaries." Therefore, understanding how media coverage impacts price discovery is important. Collectively, my evidence suggests that the media serves as a valuable information source for investors on a continual basis.

4.2. Conclusions for essay 2

Emerging literature shows that the financial media is a key information intermediary in capital markets. While extant studies examining the effect of media coverage on price discovery are restricted to the *firm-level* effect, my study focuses on a broader *industry-effect* and investigates how press coverage during a fiscal year affects the pricing of industry-wide earnings information. Using a broad range of business news coverage, I find that annual media coverage mitigates investors' underreaction to industry-wide earnings. Furthermore, I find that this mitigating effect is stronger when industry-level news coverage is greater or when intra-industry information transfer is easier. These results suggest that the media improving the diffusion of industry-wide information by aggregating and disseminating common industry information, and facilitating intra-industry information transfers. Therefore, the media plays an important role in the price discovery of earnings-related information at the industry level.

My study contributes to the literature on the role of media as an information

intermediary in capital markets. I provide new evidence that the financial media facilitates the diffusion of earnings-related information and improves investors' timely responses to earnings-related information at the industry level. This study also contributes to the literature on intra-industry information transfer. I document that cross-sectional variations in the pricing of industry-wide information is associated with the level of industry common news disseminated by the media and the conditions conducive to intra-industry information transfers. My study has implications for market participants and academic researchers who are interested in understanding the role of financial media in the price discovery of earnings-related information at the industry level.

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APPENDIX A

VARIABLE DEFINITION

Variable	**Description**	**Source**
8KS_ANN	Total number of 8-K disclosures issued during the fiscal year.	DirectEdgar
8KS_NONREP	Total number of 8-K disclosures issued during the nonreport period defined as 60 trading days [-61, -2], ending two days prior to the earnings announcement date.	DirectEdgar
ACCR	Total accruals, measured as {Changes in current assets (ACT) - changes in cash (CHE)} - {changes in current liabilities (LCT) - changes in debt in current liabilities (DLC)} - changes in deferred tax liability (TXDITC) - depreciation (DP).	COMPUSTAT
ACCURACY	Analysts' relative forecast accuracy, measured as the difference between a particular absolute consensus forecast error and the corresponding absolute time-series forecast error. The consensus forecast is measured as the mean of the most recent financial analysts' annual EPS forecasts issued during the 60 trading days, ending two days prior to the earnings announcement date. Absolute time-series forecast errors are the seasonal changes of earnings per share, scaled by the stock price at the end of the fiscal year.	IBES
ANALYSTS	The number of analysts covering the firm for the fiscal year.	IBES
BETA	Systematic risk estimated from regression of daily raw returns on the return to a value-weighted market portfolio over a 250-trading-day window preceding the end of the fiscal year.	Regression
BM	Ratio of book value of common equity to market value (COMPUSTAT item CEQ/ (COMPUSTAT item CSHO*PRCC_F)).	COMPUSTAT
CAR [+2, +61]	Buy and hold abnormal return calculated as the raw return minus the return on the corresponding size decile portfolio from CRSP over the sixty-trading day window starting two days after the earnings announcement date.	CRSP
CF	Operating cash flows, calculated as cash flows from operating activities (COMPUSTAT item OANCF) minus extraordinary items and accrual portion of extraordinary items and discontinued operations (COMPUSTAT item XIDOC) reported on the statement of cash flows, deflated by average total assets (COMPUSTAT item AT).	COMPUSTAT
COUNT_ANN	The total number of articles during the fiscal year.	RavenPack
COUNT_EA	The total number of articles during the announcement period defined as 3 trading day window [-1, +1] around earnings announcement day.	RavenPack

COUNT_FIRMNEWS	The total number of firm-specific news articles during the fiscal year. A news article that is not classified as industry-related news is firm-specific news.	RavenPack
COUNT_INDNEWS	The total number of industry news articles during the fiscal year. A news article is defined as industry-related news if there is at least one other news article of the same event type (such as interest rate, demand guidance, and etc.) for a different company in the same six-digit GICS industry on the same day.	RavenPack
COUNT_NONREP	The total number of articles during the nonreport period defined as 60 trading days [-61, -2] ending two days prior to earnings announcement date.	RavenPack
COUNT_NONREP_NA	The total number of articles during the nonreport period defined as 60 trading days [-61, -2] ending two days prior to earnings announcement date, excluding the news articles that are directly related to financial analyst forecasts.	RavenPack
COV_ANN	Annual press coverage, measured as the natural logarithm of one plus total number of articles (*COUNT_ANN*) during the fiscal year.	RavenPack
COV_ANN_LAG	Prior year media coverage, which is *COV_ANN* lagged by one year.	RavenPack
COV_EA	Announcing period press coverage, measured as the natural logarithm of one plus total number of articles (*COUNT_EA*) during the announcement period.	RavenPack
COV_FIRMNEWS	Natural logarithm of one plus total number of firm-specific news articles (*COUNT_FIRMNEWS*) during the fiscal year.	RavenPack
COV_INDNEWS	Natural logarithm of one plus total number of industry news articles (*COUNT_INDNEWS*) during the fiscal year.	RavenPack
COV_NONREP_LAG	Prior year media coverage during the nonreport period, which is *COV_NONREP* lagged by one year.	RavenPack
COV_NONREP	Media coverage during the nonreport period, measured as the natural logarithm of one plus total number of articles (*COUNT_NONREP*) during the nonreport period.	RavenPack
COV_NONREP_NA	Non-analyst related media coverage during the nonreport period, measures as the natural logarithm of one plus total number of articles (*COUNT_NONREP_NA*) unrelated to analyst forecasts during the nonreport period.	RavenPack
EARN	Operating income after depreciation (COMPUSTAT item OIADP), deflated by average assets (COMPUSTAT item AT).	COMPUSTAT
EMP	Number of employees (in thousands) at the end of fiscal year.	COMPUSTAT
EP	The ratio of earnings (IB) to market value of equity (PRCC_F*CSHO).	COMPUSTAT
FIRMACCR	Firm-specific accruals, calculated as the difference between FIRME and *FIRMCF*.	COMPUSTAT
FIRMCF	Firm-specific cash flows, calculated as the differnce between CF and *INDCF*.	COMPUSTAT
FIRME	Firm-specific earnings, calculated as the difference between *EARN* and *INDE*.	COMPUSTAT

FREQ	Analyst forecast frequency is calculated as the average number of earnings forecasts that analysts made for a particular firm during the non-report period (i.e., sixty trading day window ending two days prior to earnings announcement date).	IBES
INDACCR	Industry-wide accruals, calculated as *INDE* minus *INDCF*.	COMPUSTAT
INDCF	Industry-wide cash flows, calculated as the average of cash flows across sample firms in the same six-digit GICS industry in a year, following Hui et al. (2016).	COMPUSTAT
INDE	Industry-wide earnings calculated as the average Earnings (*EARN*) across sample firms in the same six-digit GICS industry in a year, following Hui et al. (2016).	COMPUSTAT
INSTOWN	Percentage of outstanding shares held by institutional owners.	Thomson Reuters
LAG	The number of days after the end of the fiscal year that earnings are announced.	COMPUSTAT
LEV	Total debt (COMPUSTAT item DLC+DLTT) scaled by total assets (COMPUSTAT item AT).	COMPUSTAT
LN_ANALYSTS	Natural logarithm of the number of analysts covering the firm for the fiscal year.	IBES
LOSS	An indicator variable equal to 1 if earnings before extraordinary items (COMPUSTAT item IB) is negative, and 0 otherwise.	COMPUSTAT
LOSS	An indicator variable equal to 1 if earnings before extraordinary items (IB) is negative, and 0 otherwise.	COMPUSTAT
MF_ALONE	An indicator variable for standalone guidance, set to equal to 1 if managers issued at least one annual earnings guidance prior to an earnings announcement (i.e., from one day after prior year earnings announcement to one day prior to current year earnings announcement), and 0 otherwise.	IBES
MF_BUNDLE	An indicator variable for bundled guidance, set to equal to 1 if managers issued an annual earnings guidance within two days of an earnings announcement [0, +1], and 0 otherwise.	IBES
MOM	Cumulative abnormal return as the raw return minus the return on the corresponding size decile portfolio from CRSP over the sixty-trading day window [-61, -2] ending two days prior to the earnings announcement date.	CRSP
MVE	Market value of equity (COMPUSTAT item PRCC_F*CSHO).	COMPUSTAT
PEERCAR [-1, +1]	The non-announcing firms' average abnormal returns, measured as the raw return minus the return on the corresponding size decile portfolio from CRSP, within the three-day window around the announcers' earnings announcements.	CRSP
PERC_INDNEWS	Number of industry news articles divided by total number of news articles, and expressed as a percentage.	RavenPack
RATED	An indicator variable equal to 1 if the company is rated by Standard and Poor's at the end of fiscal year, and 0 otherwise.	COMPUSTAT

RESP	Analyst responsiveness to earnings announcement, measured as the number of earnings forecasts that analysts made for a particular firm during the announcement period (i.e., three trading day window around earnings announcement day).	IBES
RI	Revaluation Index measured as the absolute value of the three-day announcement-period abnormal return divided by the average of the absolute abnormal returns in 20 successive three-day periods in the nonreport period. Abnormal return is calculated as the raw return minus the return on the corresponding size decile portfolio from CRSP. Announcement period is defined as three trading day window around earnings announcement day and nonreport period is defined as sixty trading day window ending two days prior to earnings announcement date.	CRSP
RI_RAND	An alternative measure for revaluation index, measured as the absolute value of the three-day announcement-period abnormal return divided by the absolute abnormal return during a random three-day window in the nonreport period.	CRSP
RI_U	An alternative measure for revaluation index (U-statistic). Similar to Landman and Maydew (2012), I calculate the squared standardized residual returns as follows: $RI\_U = \overline{\mu_{it}^2}/\sigma_i^2$, where t = -1, 0, +1 relative to announcement day 0 for firm i. Specifically, I run daily market model-adjusted returns as $\mu_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$. R_{it} is the stock return of firm i for day t, and R_{mt} is the CRSP equal-weighted return. α_i and β_i are firm i's market model parameter estimates and σ_i^2 is the variance of firm i's market model residuals during the non-event period. The non-event period is defined as days *t*-60 to *t*-10 and *t*+10 to *t*+60 relative to the earnings announcement date, *t*=0.	CRSP
ROA	Return on assets, measured as earnings before extraordinary items (IB), deflated by average assets (AT).	COMPUSTAT
SIZE	Natural logarithm of market value of equity (COMPUSTAT item PRCC_F*CSHO).	COMPUSTAT
SP500	Membership in the S&P 500 stock index.	COMPUSTAT
SPREAD_COV	Negative 1 time the Herfindahl index (H-index) of media coverage. H-index is calculated as the sum of squares of the shares of media coverage based on the number of articles of all companies in the same six-digit GICS industry for each year. An industry with higher value indicates a more widely covered industry.	RavenPack
STD_EARN	The standard deviation of earnings (IB) measured over the last five years, scaled by assets (AT). At least three years of data is required.	COMPUSTAT
SYNCH	Stock return synchronicity, measured as log $[R^2/(1-R^2)]$, where R^2 is estimated from the following model, following Piotroski and Roulstone (2004): $RET_{i,t} = \alpha + \beta_1 MARET_{i,t-1} + \beta_2 MARET_{i,t} + \beta_3 INDRET_{i,t-1} + \beta_4 INDRET_{i,t} + \varepsilon$. $RET_{i,t}$ is firm i's week t return, $MARET_{i,t-1}$ and $MARET_{i,t}$ is the prior and current weekly valued-weighted	CRSP

	market return from CRSP. $INDRET_{i,t}$ is the value-weighted average return of all firms within the same industry for week t, with firm i's weekly return omitted. $INDRET_{i,t-1}$ is the prior week value weighted industry return.	
UE	Unexpected earnings measured as the actual earnings per share as reported by IBES minus the mean of most recent individual analyst forecasts, scaled by the stock price at the end of the fiscal year.	IBES

APPENDIX B

NEWS DESCRIPTIONS

GROUP	TYPE	Firm-specific News	Industry-wide News	Total	Percent
Earnings	Earnings	108,892	201,924	310,816	12.17%
Earnings	Earnings per share	63,093	119,467	182,560	7.15%
Earnings	EPS-guidance/ Earnings-guidance	62,748	38,883	101,631	3.98%
Earnings	Operating earnings, EBITA, etc.	16,563	3,312	19,875	0.78%
		251,296	*363,586*	*614,882*	*24.07%*
Insider Trading	Insider sell	43,477	221,788	265,265	10.38%
Insider Trading	Sell registration	36,524	190,490	227,014	8.89%
Insider Trading	Insider buy	42,324	87,305	129,629	5.07%
Insider Trading	Gift, Surrender, Lawsuits	60,393	46,524	106,917	4.19%
		182,718	*546,107*	*728,825*	*28.53%*
Revenues	Revenues, Revenue guidance, Sale, etc.	107,909	134,965	242,874	9.51%
Products services	Business contract, Product release, Clinical trials, Award, etc.	109,349	93,722	203,071	7.95%
Labor issues	Executive appointment, Resignation, etc.	101,734	59,246	160,980	6.30%
Acquisitions	Acquisition, Merger, Stake, etc.	88,489	24,256	112,745	4.41%
Analyst ratings	Analyst ratings changes, Set, History	51,723	56,666	108,389	4.24%
Equity actions	Trading, IPOs, Buybacks, etc.	83,280	17,904	101,184	3.96%
Credit ratings	Credit rating changes, Credit watch	57,757	6,896	64,653	2.53%
Dividends	Dividends, Guidance, etc.	36,218	16,695	52,913	2.07%
Marketing	Campaign, Conference, etc.	17,054	22,193	39,247	1.54%
Credit	Note sale, Debt, Loan, etc.	31,025	3,325	34,350	1.34%
Assets	Facility, Asset, Patent, etc.	26,755	2,370	29,125	1.14%
Partnerships	Partnership, Joint venture, etc.	19,960	7,971	27,931	1.09%
Legal	Settlement, Verdicts, Lawsuits, etc.	21,475	1,634	23,109	0.90%
Others	Bankruptcy, Accidents, etc.	9,081	964	10,045	0.39%
		1,195,823	*1,358,500*	*2,554,323*	*100.00%*

APPENDIX C

EXAMPLES OF NEWS TYPES

This appendix contains different news formats in my sample. Full articles constitute 37.68% of my sample, news flashes constitute 39.96% of my sample, press releases constitute 18.72% of my sample, and tabular material constitute 3.64% of my sample.

C-1 Excerpt from Full Articles

Pep Boys Swings To 3Q Profit On Services; Same-Store Sales Up

2009-12-07 22:10:39 UTC

DOW JONES NEWSWIRES

Pep Boys-Manny Moe & Jack (PBY) swung to a fiscal third-quarter profit on stronger service revenue, and reported its first same-store sales increase in almost three years.

But shares dropped 8.4% to $8.49 in after-hours trading as **the company** cited continuing problems from consumers' tightened spending, although the **auto**-parts and service retailer's results met or exceeded Wall Street's expectations. The stock has more than doubled this year.

Chief Executive Mike Odell said same-store sales increased for the first time since the fourth quarter of 2006 and the customer count grew for the first time since the first quarter of 2004.

But he said "discretionary spending still remains a challenge to our accessories and complementary product categories, and is expected to continue through the fourth quarter's holiday season."

Pep Boys, which has more than 580 stores and 6,000 service bays in 35 states and **Puerto Rico**, hasn't posted an annual profit since 2005, but **the company's** turnaround efforts have been gaining traction this year. Cost-cutting and the trend toward keeping **cars** longer during the economic downturn have helped.

C-2 News Flashes

Staples 3Q Net $269.4M Vs Net $156.7M >SPLS

2009-12-01 11:02:25 UTC

(MORE TO FOLLOW) **Dow Jones Newswires** (212-416-2400)

Xerox Corp Sells $2 Billion 3-Part Note Issue

2009-12-01 21:29:35 UTC

(MORE TO FOLLOW) **Dow Jones Newswires**

C-3 Press Releases

PRESS RELEASE: Emergent Group Inc. Board Declares Annual Dividend of 40 Cents Per Share, an Increase of 33% From Prior Year

2009-12-01 13:01:37 UTC

Emergent Group Inc. Board Declares Annual Dividend of 40 Cents Per Share, an Increase of 33% From Prior Year

CEO Cites Continuing Strong Cash Flow, Growth Strategies and Shareholder Value Leading to Cumulative $1.30 in Annual Dividends Declared Over Five Years

SUN VALLEY, **Calif.**, Dec. 1, 2009 (GLOBE NEWSWIRE) -- **Emergent Group Inc.** (**NYSE Amex** Equities:LZR), a leading provider of mobile medical lasers and surgical equipment, today announced that the Board of Directors has declared an annual dividend of $0.40 per share, payable January 13, 2010 to shareholders of record December 23, 2009. Since 2005, the Board has declared cumulative cash dividends of $1.30 per share.

C-4 Tabular Materials

Barron's(12/14) Dividend Payment Boosts

2009-12-12 05:07:51 UTC

(From **BARRON'S**) Company Name-Ticker Symbol (Exchange) % Record Ex-Div Payment Period To From Increase Date Date Date **Axis Capital Holding**-AXS (NYSE) Q .21 .20 5.0% 12-31 12-29 1-15 BlkrckLTMuniAdv-BTA (NYSE) M .0595 .0575 3.5% 12-15 12-11 12-31 Blkrck Munienhanced **Fd**-MEN (NYSE) M .055 .053 3.8% 12-15 12-11 12-31 Blkrck MuniYldMIIns-MIY (NYSE) M .075 .0725 3.4% 12-15 12-11 12-31 Blkrck MuniYldNYIns-MYN (NYSE) M .055 .0525 4.8% 12-15 12-11 12-31 **Brandywine Realty Trust**-BDN (NYSE) Q .15 .10 50.0% 1-06 1-04 1-20 DWS DremanValInco-DHG (NYSE) M .07 .06 16.7% 12-17 12-15 12-31 DWS Hi Inco-KHI (NYSE) M .065 .06 8.3% 12-17 12-15 12-31 DWS Strat Inco-KST (NYSE) M .085 .08 6.3% 12-17 12-15 12-31 DWS Strat Muni-KSM (NYSE) M .0835 .077 8.4% 12-17 12-15 12-31 **Danaher Corp**-DHR (NYSE) Q .04 .03 33.3% 12-31 12-29 1-29 **Edison International**-EIX (NYSE) Q .315 .31 1.6% 12-31 12-29 1-31 **Erie Indemnity Co** A-ERIE (Nasdaq) Q .48 .45 6.7% 1-05 12-31 1-20 **Horace Mann Educators**-HMN (NYSE) Q .08 .0525 52.4% 12-21 12-17 12-31 **J&J Snack Foods**-JJSF (Nasdaq) Q .1075 .0975 10.3% 12-15 12-11 1-06 Mass Hlth&Ed TxEx-MHE (AMEX) M .0645 .062 4.0% 12-15 12-11 12-31 NeubBrmnCAIntMuni-NBW (AMEX) M .068 .059 15.3% 12-31 12-29 1-15 NeubBrmnIntrmdMun-NBH (AMEX) M .07 .06 16.7% 12-31 12-29 1-15 NeubBrmnNYIntMuni-NBO (AMEX) M .065 .059 10.2% 12-31 12-29 1-15 **United Guardian Inc**-UG (Nasdaq) S .32 .28 14.3% 12-18 12-16 1-04 **Valspar Corp**-VAL (NYSE) Q .16 .15 6.7% 12-31 12-29 1-15 **Western Union Co**-WU (NYSE) Q .06 .04 50.0% 12-21 12-17 12-30

APPENDIX D

EXAMPLES OF INDUSTRY-LEVEL NEWS STORIES

This Appendix contains examples of industry-level news reports. There are two types of industry-level news articles using my definition in Chapter 2. First, multiple companies in the same industry are mentioned in one news article. The second one is when two or more companies in the same industry are mentioned in different articles about the same type of events (e.g., revenues, product releases, market shares) on the same day.

D-1 Earnings (One article mentioning multiple companies on the same day)

MW What to expect from Exxon, Chevron and ConocoPhillips earnings

By Claudia Assis, **MarketWatch**

Here's how the top 3 energy companies fare amid falling **oil** prices

Exxon Mobil Corp., **Chevron Corp.** and **ConocoPhillips** are expected to report fourth-quarter earnings in the next few days.

Chevron (CVX) will lead the way, reporting before the bell Friday, with **Exxon (XOM)** and **ConocoPhillips (COP)** following on Tuesday and Thursday, respectively.

As **oil**-futures prices fall further, several energy companies have already announced plans to cut down on their spending for the year. Investors will look for any clues whether the three major **oil** and **gas** companies will follow suit.

D-2 Market-share (Two different articles of the same event type on the same day)

Isuppli:AU Optronics Has 18.9% Mkt Shr For Global Large-Sized LCD Panels Shipments

(MORE TO FOLLOW) **Dow Jones Newswires** (201-938-5400)

November 12, 2008 18:54 ET (23:54 GMT)

Isuppli: LG Display Has 20.3% Mkt Shr For Global Large-Sized LCD Panels Shipments

2008-11-12 23:53:40 UTC

(MORE TO FOLLOW) **Dow Jones Newswires** (201-938-5400)

November 12, 2008 18:53 ET (23:53 GMT)

D-3 Product services (One article mentioning multiple companies on the same day)

Northwest,Delta Get Tentative Antitrust OK For Atlantic Route

MINNEAPOLIS (AP)--**Northwest Airlines Corp. (NWA)** and **Delta Air Lines Inc. (DAL)** won preliminary approval to share revenue and coordinate schedules across the Atlantic, the **Department** of Transportation said on Wednesday.

Northwest, **Delta**, as well as **Air France-KLM (AFLYY)** and two other carriers in the SkyTeam Alliance have sought immunity to essentially operate as one airline across the Atlantic. Northwest has had that permission for **KLM** for 15 years, before **KLM**'s merger with **Air France**.

The Transportation **Department** said it issued a show-cause order tentatively approving the antitrust immunity. A final ruling is due April 30.

The SkyTeam carriers, which also include **Alitalia (AZA.MI)** and **Czech** Airlines JSC, will remain subject to antitrust laws for non-trans-Atlantic flights.

The antitrust immunity in effect gives Northwest and **Delta** the benefits of a combination, at least for their Atlantic flights. They have been exploring consolidation of the airlines, but that has been held up so far by the failure of their pilots to make a deal on seniority.

APPENDIX E

SAMPLE DESCRIPTION

Table E-1: Sample selection

(1)	NYSE, AMEX, and NASDAQ observations from 2000 to 2016 with December 31 fiscal year end and stock price greater than $1.00	49,737
	Less:	
(2)	Financial institutions (two-digit GICS code = 40)	(12,190)
(3)	Firm-year observations without stock prices	(3,926)
(4)	Firm-year observations in an industry with less than 4 firms in a year	(97)
(5)	Firm-year observations without sufficient COMPUSTAT data	(2,114)
(6)	Firm-year observations without analyst forecasts	(4,167)
(7)	Days between an earnings announcement and fiscal year-end greater than 90 days	(356)
		26,984

Table E-2: Sample distribution by year

Year	Number of Firms	% of Sample	Year	Number of Firms	% of Sample
2000	1,449	5.37	2009	1,596	5.92
2001	1,484	5.50	2010	1,579	5.85
2002	1,463	5.42	2011	1,572	5.82
2003	1,498	5.55	2012	1,583	5.87
2004	1,567	5.81	2013	1,595	5.91
2005	1,604	5.94	2014	1,691	6.27
2006	1,614	5.98	2015	1,747	6.48
2007	1,642	6.08	2016	1,723	6.38
2008	1,577	5.84		**26,984**	100

Table E-3: Industry composition

GIC 4	Industry Group Name	No. of unique firms	No. of firm-year	% of Sample	% of Compustat
1010	Energy	352	2,558	9.48%	8.01%
1510	Materials	171	1,591	5.90%	5.26%
2010	Capital Goods	279	2,443	9.05%	9.19%
2020	Commercial Services & Supplies	125	1,088	4.03%	3.93%
2030	Transportation	74	722	2.68%	1.87%
2510	Automobiles & Components	39	327	1.21%	1.15%
2520	Consumer Durables & Apparel	106	933	3.46%	3.74%
2530	Consumer Services	161	1,150	4.26%	4.27%
2540	Media	103	734	2.72%	2.72%
2550	Retailing	85	670	2.48%	4.71%
3010	Food & Staples Retailing	17	116	0.43%	0.93%
3020	Food Beverage & Tobacco	65	529	1.96%	2.57%
3030	Household & Personal Products	21	190	0.70%	1.14%
3510	Health Care Equipment & Services	346	2,513	9.31%	8.80%
3520	Pharmaceuticals, Biotechnology & Life Sciences	435	2,558	9.48%	10.23%
4510	Software & Services	490	2,848	10.55%	10.82%
4520	Technology Hardware & Equipment	206	1,615	5.99%	7.93%
4530	Semiconductors & Semiconductor Equipment	105	1,007	3.73%	3.66%
5010	Telecommunication Services	86	506	1.88%	1.61%
5510	Utilities	100	1,207	4.47%	2.90%
6010	Real Estate	185	1,679	6.22%	4.55%
			26,984	100.00%	100.00%